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Health Councils in Local Communities*

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THE health council is potentially one of the most valuable and powerful health forces in a community"—so the Gunn-Platt Study of Voluntary Health Agencies concluded.

WHEN TEAMWORK IS LACKING

A look at the situation in a Midwest city may serve to show what can happen when there is no machinery to coordinate the many and varied groups carrying on some phase of health work or to plan for the community's health.

This particular city has a population of about 400,000 and the county an additional 100,000.

The city and the county health departments are both very poor—woefully understaffed and inadequately financed. Nobody is doing anything to try to get more money for the departments, to raise their standards, or to study the possibility of combining the two into one centralized department so that every dollar available for official health department service may produce maximum benefit to the community.

The dental society, working alone and without help from any quarter, is doing all that is being done in dental health, but this is limited to lectures and exhibits in the public schools. There is no program for prophylaxis and there are no clinics for treatment.

In nursing they have a bedside service rendered by insurance companies to their own policy holders but no such service for others, some nurses in the health departments but none in the schools. The shortage of nurses is serious in hospitals and in public health agencies. The professional nursing association is struggling with the problem, but there is no general community interest in it and no community program for meeting nursing needs.

The schools are just beginning to develop health education.

For the rapidly increasing numbers of chronic cases needing care, the county home provides custody only. Low-income patients go into the workhouse hospital when on rare occasions there happens to be a vacant bed. Nothing is being done to meet the broader problem.

There are no general medical clinics and no mental hygiene clinics.

The health department furnishes the staff for the tuberculosis clinic, but has to depend upon the tuberculosis association to furnish the building in which

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it operates, to pay the nurses and the cost of x-ray services.

An infantile paralysis committee collects funds but has no service program.

The local branch of the American Cancer Society, besides fund raising, refers people to doctors. There is no educational campaign in regard to cancer.

Nothing is being done in a public health way about diabetes, heart disease, nutrition, or social hygiene.

Nobody has a comprehensive picture of the community's specific health needs. There is no organized way of bringing together interested citizens, the professions concerned, and health executives to study and plan for the community health.

WHEN HEALTH GROUPS PULL TOGETHER

Another Midwest city of not much larger size has had a health council for 30 years. The council is made up of representatives of every official health department, of every voluntary health agency, clinic, and hospital, of the medical, dental, nursing, and pharmacy associations, of civic and social agencies with a direct public health interest. It meets annually to receive reports on the work done and to elect officers and members-at-large to the coördinating committee. This committee is the governing body and meets monthly. The health commissioners are ex-officio members of the coördinating committee. The four professional societies, by constitutional provision, are each entitled to name a member of the coördinating committee. The health council has 13 divisions, each conducting its own program subject to coördinating committee approval. Each division elects its own chairman who serves on the coordinating committee. There are, in addition, a number of subcommittees, some regular and some temporary, dealing with special problems.

In this community the heads of all health agencies are in touch with what other groups are doing, and they join in continuing study of health problems and programs. There is a minimum of friction and misunderstanding and an awareness of gaps in the community health program.

In all, there are some 500 people, delegates, and division members, participating in the work of the health council. Each month they receive reports on current health developments. As a problem arises calling for united action they are alerted.

The council recognizes the health departments as the proper center of public health activities and does everything in its power to strengthen these departments and help them to secure adequate budgets. They, in turn, have participated wholeheartedly in the coordinated effort to promote the public health. The council believes that the several health departments in the county should be centralized in a single department and has consistently, but so far unsuccessfully, worked to that end.

The council adheres to the policy that when an official department expresses its readiness to take over an activity of a voluntary agency, the transfer should be made without quibble. On the other hand, it scrupulously observes the autonomy of its affiliated agencies and avoids competing with them in any way.

Programs of the various health agencies are constantly observed and from time to time recommendations for modification of programs are made—always on the basis of careful study and with no attempt to force action on any recommendation. As examples, hospital social service provided by voluntary agencies to two public hospitals was taken over by the hospitals; medical direction of an independent clinic was assumed by the College of Medicine while another free-lance clinic was transferred to the direction of the

department of health; a child health agency is gradually integrating certain of its functions with the city health department.

The council has a paid staff consisting of one part-time and three full-time executives, secretarial service, and two extraordinarily competent volunteers, one full-time and the other half-time, who serve just as conscientiously as anyone on the payroll and add great strength to the organization.

Research plays a vital role. Special studies of problems of agencies and institutions are made as the need develops. The tabulation and analysis of mortality statistics is a continous function. One phase of these studies deals with mortality from various diseases in the different census tracts and compares the experience of various economic and racial groups. It serves to indicate sections of the city in which concentrated effort may be needed on particular problems. Another phase of the mortality studies is concerned with refined and adjusted bases of comparison of this community with comparable cities. In this way, the council learns whether the city is keeping pace with other communities and sometimes where special emphasis needs to be placed. As an example, it was found several years ago that the city's death rate was high from appendicitis. An intensive education campaign, undertaken jointly by the council and the medical society, succeeded over a period of years in reducing the city's rate below the average. Enteritis and diarrheal diseases also were found to take a higher than average toll. The combined efforts of the health department and other health groups has not so far succeeded in effecting substantial reduction in mortality from these causes, but the battle against them goes on. More recently it has been discovered that, after adjustment for age, the rate of death from home accidents is high. A committee made up of representatives of interested agencies is now at work on this problem.

Comprehensive health education is an important part of the program. It includes two weekly radio programs, feature articles in the press and, in addition, a daily series in one newspaper, a weekly item in another, and a specially illustrated feature in suburban and labor papers. Street cars and busses carry illustrated car cards continuously. Monthly health bulletins are sent to factories, drug stores, and public buildings. A four page leaflet on nutrition is distributed each second month to several thousand low income families. A special leaflet goes each month to members of Negro health clubs. The council provides "Public Health Notes" for the medical society's monthly *Journal of Medicine*. Health chairmen of the Parent-Teacher Association clubs receive a one page message which they read to their members at their monthly meetings. Copy for most of this material is reviewed by representatives of the medical society and the department of health, and most of it carries the names of the three organizations. Lectures, exhibits, and printed leaflets round out the education media used.

As examples of filling in gaps in the program, the establishment of a health center for Negroes where Negro doctors and dentists had their first opportunity locally for clinical experience, and the launching of what has grown to be a most successful central mental hygiene clinic may be mentioned.

The council directed successful campaigns for bond issues to provide better facilities for the city hospital and to build a new county home and chronic disease hospital. Several years ago it joined hands with the tuberculosis association in securing a bond issue which financed the modernization of the tuberculosis hospital.

The legislative committee keeps in

touch with local, state, and national legislation affecting health, and with the backing of its constituent agencies supports desirable bills and opposes objectionable measures.

The need of facilities for the care of the chronic sick and the shortage of nurses are among the problems facing this (and practically every) community. Both are receiving intensive study by local groups with a plan of action as the goal.

Support was given to a vigorous public campaign that led to the enactment of a strong ordinance for smoke control.

As an illustration of good interagency teamwork, the tuberculosis association is financing a vigorous joint program in nutrition, directed for the council's nutrition division by a well trained, full-time nutritionist.

Mortality studies having demonstrated excessive rates from certain preventable diseases in slum areas, the council is supporting the uphill battle for decent housing and is calling public attention to low income as an obstacle to health improvement.

A future objective is the development of a master plan for health.

ORGANIZATION OF HEALTH COUNCILS

The Gunn-Platt Report studied health committees, divisions, and councils set up in some 34 cities for the purpose of coordinating health activities. It states the purpose of a health council well in these words "to coordinate as far as possible the health thinking and planning of all the organizations, public and private, concerned with public health, including the medical, dental, and nursing professions. It studies the health needs of the community and endeavors to develop a community health program to meet those needs. It attempts to stimulate public interest in public health problems, and it may render common health services in such fields as statistics, research, and health education. It usually expresses itself in matters of health legislation."

The National Committee of Health Council Executives has set down certain principles which it considers essential for the successful organization and functioning of a health council. Among them are: that it be representative of the recognized health forces of the community; that it be without limitation as to race or creed; that it have liaison with recreational and welfare organizations. Recognizing that the form of organization and operation will vary, depending upon local conditions, the health council in large communities, the National Committee states, needs a full-time staff and budget. The executive should have the necessary qualifications and should be chosen by the council in coöperation with the other local agencies involved. The council should determine its own policies but should work in the closest harmony with both the Council of Social Agencies and the Community Chest, where they exist.

From the results of a recent questionnaire survey of 31 cities known to have some kind of coördinating health agency, it is possible to draw some general conclusions as to how they are organized and what they attempt to do. Most of the councils are in cities of over 250,000 population and apparently very few in places of less than 100,000. They are organized almost uniformly under the sponsorship of a Community Chest or Council of Social Agencies—whether they be called health council, section, division, league, federation, or committee. With few exceptions, lay people and the public and private health agencies and the professional societies are represented. Usually, their scope is the county or metropolitan area. Invariably, they aim to promote coordination and joint community planning. In the larger communities there

is usually a paid executive but only rarely is the executive selected by the council itself. Few have their own budgets. Usually the Community Chest or the Council of Social Agencies selects the executive and meets the council's expenses out of its own budget. Almost without exception the council determines its own policy and program.

None of the 5 cities of less than 100,000 population has a paid executive.

Types of activity vary greatly. There is no general pattern. Nursing, convalescent care, dental hygiene, the chronic sick, special types of health education, mental health, nutrition, hospital care, surveys of community health facilities, and support of official health departments are among the problems most commonly receiving the attention of these councils.

Exact information as to how many health councils there are in the United States at the present time is not available.

SUCCESS OF HEALTH COUNCILS

The Gunn-Platt Report gives the results of its study of 32 health councils. Three-fourths of the 32 were found to be weak and ineffective. Four were rated excellent, and 4 good. Some of the reasons the Report gives for the poor rating of most of the councils are: an executive who lacks drive or has too many duties, inadequate funds, poor working relationship between the health council and the official health department.

There is no magic in the organization of a health council. If there is no such agency, there can be little chance of any real teamwork among health forces or of intelligent community planning. Where such an agency does exist, there is at least an opportunity for effective coördination of effort. But this will not come about automatically just because machinery is set up or a gesture made. A health council in any large community needs a competent staff—at least an executive who has had enough training in health work to know what it is all about, and enough common sense to know that people have to be dealt with tactfully if they are to pool their efforts with those of others, and to be constantly conscious of the fact that a coördinating agency must give credit graciously and willingly to others and not seek all the credit for itself. The executive must have qualities of leadership and the ability to keep his groups interested, else they will gradually disintegrate. He must encourage them to participate in decisions so that they will feel that they are not looked upon as "rubber stamps." He must have enough funds to do something about the major programs his groups decide upon. Otherwise they lose interest as they find that things do not get done and tire of fruitless meetings. He must recognize that the official health department is the hub of the wheel of public health, and not try to compete with or detract from the prestige of the health officer. If the health officer is incompetent, then there is a different problem—namely, to try to find ways and means of effecting a change.

The fact that some health councils are getting results shows that in a favorable situation the plan works. The fact that so many are weak indicates difficulties that must be overcome. One of these difficulties is certainly lack of trained people for the executive positions involved. This lack is not likely to be met until schools of public health train more people for public health work in general and give them some instruction in community organization and planning. Another is starvation budgets insufficient to pay adequate salaries and to implement an active program. In the larger communities, one executive staff member is not enough. He quickly becomes overwhelmed with a multiplicity of duties, with the result

that the council's programs remain on paper. Two ways in which financing of health councils might be met suggest themselves. One is that Community Chests recognize that community health problems will not be handled effectively, nor the individual health agencies in the Chest fulfil their best purpose, until there is dynamic health-coördinating machinery and that theirs is the responsibility for financing it. Another is that in sections of the country where the tuberculosis mortality has declined to the point that the problem is well in hand, local tuberculosis associations consider spending some of their funds to set up health councils where they do not exist or to help put them on a sound financial basis where they are starved for funds.

The rapid increase in fund-raising drives for health purposes and the establishment of new local agencies—infantile paralysis, cancer, heart, social hygiene, arthritis, alcoholism, cerebral palsy, multiple sclerosis, epilepsy—is complicating the already confused situation in local communities. Unless there is some kind of effort at coordinating the numerous activities going on in our communities, the public is likely to become more and more confused and health work more disparate and stratified.

HEALTH COÖRDINATION IN SMALL COMMUNITIES

How about small communities and counties? Do they have problems that require united planning and action? Does a health council or committee have anything to offer them? Unfortunately there is not much experience to go on, but what happened in Lewis County in the State of Washington is illuminating. This county of 42,000 population has no regulations governing the production and sale of milk. Being surrounded by counties that do have such regulations, it has been from time to time the dumping ground for dairy products that could not be sold elsewhere. The same is true of meat inspection. There is no regulation of eating places. The community needs more hospital facilities and more doctors and dentists.

According to an official of the State Health Department, these conditions exist "not because nobody cares about health problems, but because while many groups wanted something done, there just was not any machinery for getting people together to see that it was done." Some of the leaders began to wonder why they could not have some kind of an organization to present a united front when action was needed—to get an ordinance, to appear before the county commissioners, or to pull together in a joint campaign. Late in 1946, three citizens—one from the Tuberculosis League, one from the County Extension Service, and one from the Health Department—decided that what was needed was a health council. And now they have it, with representatives of these three groups and, in addition, a considerable number of organizations, including the schools, the Grange, the County Medical Society, the Welfare Department, the Red Cross, the Junior Chamber of Commerce, the Medical Auxiliary, the Parent-Teacher Association, the Women's Council, the Cancer Control group, Kiwanis, Optimist Club, as well as dentists, nurses, county commissioners, legislators, and a considerable number of interested lay persons. The council has adopted a constitution, has a voluntary secretary, and meets alternately in the two largest towns in the county.

The first problem that came before the new-born council was where to locate a new hospital for which a bond issue had just been voted. The citizens of each of the two largest cities quite naturally want the hospital in their town.

The only thing agreed upon is that more hospital beds are needed and needed quickly. And so the Health Council has stepped in and is grappling with the problem of finding some acceptable solution.

Says the state health official, "the Health Council will see to it that the need for more beds doesn't 'die in committee' because its job is to keep health needs before the people. In similar ways it will go on to other problems, like obtaining good ordinances governing food handling and milk supplies, getting more doctors and dentists to serve its people, doing something about the shortage of nurses, getting a playground and a swimming pool, and so on down the long line of health needs. The Health Council will bring to these projects the support of organized groups and of citizens and coöperatively solutions will be worked out."

Not every county has needs exactly the same as those of this western community, but it would not be easy to find one that has none. Almost invariably there are a number of groups engaging in or interested in some kind of health work—the professional medical, dental, and nursing societies, the health department, the Red Cross, a tuberculosis association, an infantile paralysis committee, a branch of the American Cancer Society, the schools, a Parent-Teacher Association. It just seems common sense that if these groups can be brought together to pool their knowledge, study their problems, and plan for action, they can get things done that just will not come about so long as there is no "united front."

The plan for organization of a health council for a small county will be of the simplest. What is needed is some kind of agency, whatever it may be called, in which representatives of the interested groups can be brought together regularly to study their problems, decide what their needs are, and join hands for a common program. Certainly no such community will be able to afford or, in fact, need a full-time paid executive. An interested member of the staff of some one of the health groups may well serve as secretary.

It is unlikely that county health councils will develop rapidly, because most citizens of small counties are not likely to be keenly aware of their health problems, and because leaders with the vision and the drive essential to get a council organized and keep it going are rare. Those facts do not argue that the health council plan is not adapted to such communities or that it will not work under favorable conditions. At present few councils exist in counties that have no large cities or, if they do, information about them is lacking.

CONCLUSION

Sixteen years ago Howard Whipple Green, successful executive of the Cleveland Health Council, wrote "After more than 10 years' trial, it now seems clear that the fundamental procedure adopted by health councils is productive of favorable results. When provided with competent personnel, necessary funds, and able guidance, health councils have demonstrated an ability to exert leadership in the public health activities of their respective communities. They have been influential in obtaining the coördination of activities which previously were overlapping or disjointed, they have successfully sponsored the development of new health activities when needed; and, most important of all, they have carried on studies of health needs and have planned and, in considerable degree, brought to fruition programs of development based upon needs rather than upon impulse and guesswork."

Since that time, many new health

councils have been formed. The proportion of effective councils remains disappointingly small. The principal reasons for poor performance are lack of funds, of competent staff and of dynamic leadership. The plan is sound and it works when these requirements are met. Not until national and local leaders in the health field develop an awareness of the fact that "The health council is potentially one of the most valuable and powerful health forces in a community" will the three-fourths of the health councils that are weak be furnished with the ingredients that will make them strong or the many sizeable communities that lack machinery for united action on the health front fill in the present void. It would, indeed, be unreasonable to expect health councils, even under ideal conditions, to perform miracles. No community with the best directed health council conceivable will solve all its problems. There will still be gaps and plenty of unmet needs. But the gaps and the unmet needs will almost certainly be highlighted with much greater chance that in due time something will be done about them than in the community that continues in ignorance of its own problems.

In the smaller communities, coordinating health machinery will develop slowly. Its pace will be quickened by more demonstrations that it is a practical and, under intelligent leadership, a useful tool for improving the community's health resources.

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AMERICAN PUBLIC HEALTH ASSOCIATION

Need for Systematic Evaluation of Substandard Housing*

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PUBLIC health workers have begun to realize that they cannot afford to take an ostrich-like attitude about housing. With the dawn of this new point of view, numerous questions have arisen involving the mechanics of carrying on a program in healthful housing. It is the purpose here to outline specific activities that may provide bench marks for administrators who seriously intend to tackle their housing problems.

The history of the public health movement itself provides precedent for organizing a realistic program of housing sanitation. Modern public health had its origins about a century ago in surveys of health and laboring conditions carried on in England by Edwin Chadwick and Southwood Smith, and in this country by Lemuel Shattuck and Stephen Smith. Indeed, the superb work of Stephen Smith and his associates in studying New York slums 80 years ago led to the first housing sanitation program in the United States.[1] Just as these pioneering ventures focused attention on specific problems of moment to everyone, so might we expect intensive work in the hygiene of housing to be a product of an earnest and well directed study of modern health and housing conditions.

No wise public administrator would consider undertaking a program of action without having some basis of demonstrated need. Abraham Lincoln has stated this well: "If we could first know where we are and whither we are going, we could better judge what to do and how to do it." In the field of housing, health administrators have found that they need facts upon which to build a program. As a result of the Housing Census of 1940 and of many real property inventories, we know that approximately one-third of the population lives in substandard housing. In September, 1946, the National Housing Administrator reported that 2,000,000 married veterans were living doubled-up or in stop-gap quarters, and that 4,000,000 wanted to rent, buy, or build. It is the task of local officials to find those of their neighbors who are inadequately housed, and on the basis of those findings, to plan action which ultimately will lead to an improvement of housing through the elimination of slums and the arrest of spreading blight. Experience has shown that health authorities are well able to make these preliminary determinations.

Health departments have long been depositories of data on occupied housing, particularly multi-family units. However, a decade ago, when the public housing program began in the United States, health officers were not in position to use their files for detailed infor-

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mation on local housing conditions. Furthermore, few health officials today are in position to provide precise information on housing standards. Studies at the National Bureau of Standards of many state and local building codes and regulations have revealed phenomenal differences between basic requirements. For instance, local standards for light, heat, and ventilation are widely at variance, and evidence is abundant that progress in scientific discovery is particularly slow in being reflected in building and housing codes and regulations.

Even though a health department has personnel competent to develop modern standards and regulations concerning housing and its sanitation, significant constructive action to improve housing conditions is unlikely until specific information relative to local housing needs is at hand. The drafting of legislation alone cannot solve many problems in a society such as ours. Probably the most important single step that a health officer can take in the field of housing is to accumulate precise data concerning individual premises throughout the community, including the aggregation of these premises into areas significant for administrative policy and action.

Studies of administrative practices in city health departments have revealed that aimless inspection of housing brings few tangible results and does practically nothing toward the improvement of the total housing picture. For instance, in several cities relatively ambitious but inadequately directed housing inspections carried on over a long period of time have done nothing toward eliminating the poorest housing. Indeed, blight has been spreading and getting more serious, and new slums are being created despite the routine housing inspection programs. It is self-evident that the sporadic inspections which have been traditional in many urban health departments are unlikely to produce any body of actionable information.

Studies of the mechanics of complaint investigations in city health departments have revealed that many housing problems are reported by citizens.[2] The distribution of housing complaints in terms of time and space is spotty at best, and frequently such complaints involve no basic problems. Furthermore, routine investigations of complaints usually are directed exclusively at the situation that precipitated the complaint and ignore other aspects of the premises. Thus, the investigator frequently fails to do anything more than suggest palliative action or symptomatic treatment.

Another shortcoming of traditional housing inspections has been that they reflect the bias and personality of the inspector. It is axiomatic that individuals of dissimilar training may react differently to given sets of circumstances. Unfortunately, the forms supplied to most health department inspectors for recording and reporting are not designed to improve the objectivity of the individual. Thus, information gathered on housing conditions may be quantitatively adequate, but qualitatively almost worthless.

Because of these deficiencies in existing practice, it is likely that heroic steps will have to be taken to recast the approach to housing sanitation. In the few cities where health departments have squared with housing problems, almost without exception the initial activities have involved surveys of existing conditions.[3] As a basis for developing any new health program, a careful study of what is needed has much to offer.

Certain facts that will classify the quality of existing housing are necessary if an action program is to be developed. It is essential to know which areas meet accepted minimum standards of dwelling and environmental quality. There should be information about areas showing early or moderately advanced

blight, where it would be possible economically to restore both the dwellings and environment to an acceptable minimum standard by enforcement of suitable legislation. Areas should be delimited in which the quality of dwellings or environment, or both, is so bad that it would be foolhardy to attempt to rehabilitate either for housing purposes.

In a well rounded survey, it would be expected that descriptive as well as qualitative information on familial and structural characteristics would be assembled. For instance, data on family size, dwelling unit size, and types of housing structures are essential in planning for rehabilitation and new construction.

There invariably needs to be replanning of areas in which enforcement is not sensible. Comprehensive and specific information relative to the entire local housing problem is basic to the development of an urban plan.[4] Planners deal with neighborhoods. The quality of existing neighborhoods is determined in large measure by summating the quality of individual pieces of property. Experience has shown that subjective impressions gained haphazardly are not satisfactory for planning purposes. Without facts gathered objectively, it is impossible to plan intelligently. A survey properly organized and wisely directed will furnish the facts that are needed for planning purposes.

Pertinent local housing legislation is the backbone of a real enforcement program.[5] Sensible legislation can be developed only if there is an understanding of the basic elements of design, maintenance, and occupancy. Local characteristics play such an important rôle in the development of ordinances and regulations that it is unlikely that standard housing codes developed by national groups can ever have specific validity everywhere. A local housing survey would be expected to provide information that would strengthen any existing codes, and that would form the basis for amending realistically any suggested standard codes.

Health officers and sanitary engineers frequently ask if a housing survey can be done on the basis of routine inspections or complaint investigations. The answer to that question depends to a large extent on local conditions. The most economical method of carrying on a housing survey is to conduct it as a specific job with systematic coverage of significant areas. It is difficult to build up a body of useful information based on a routine, haphazard inspection program. In addition, unless actionable areas are specifically mapped out in detail and information about them is collected within a short period of time, the accumulation of data necessary to plan a program may take so long that conditions will change before there is any programmed action. The condition of housing is never static. In general, it would seem advisable, wherever possible, to carry on a survey as an intensive job and not to dilute an appraisal with other more routine activities.

The Committee on the Hygiene of Housing of the A.P.H.A., after several years of thorough study, has developed an appraisal technic for the objective measurement of the quality of urban housing.[6, 7] This system is designed precisely to meet the needs outlined above. The method deals with structural, dwelling unit, and environmental items that are of health significance. It now has been used officially in several cities including Portland, Me., New Haven, Conn., Milwaukee, and Los Angeles, and it will be utilized widely elsewhere in the immediate future. There no longer can be doubt as to the validity of this tool for general urban use, regardless of geographic, climatic, or cultural differences that may exist between the New England communities where it was developed and cities in

other parts of the country. The primary value of this method centers around its objectivity. Subjective data are practically impossible to use in a large program. The appraisal technic substantially eliminates subjective evaluation of premises being inspected.

Users of the technic have been impressed with its completeness as well as its objectivity. With this one tool it is possible:

1. To evaluate the relative quality of the environment, the structure, and the dwelling unit.
2. To reveal substandardness of dwellings in terms of facilities, maintenance, and occupancy conditions.
3. To measure these deficiencies by scoring on an arithmetic scale of penalty points, and thus compare housing quality within and between communities.
4. To focus attention on basic deficiencies of singular health importance while, at the same time, describing minor and less important defects that in the aggregate are of public health significance.

Negotiations are in process between the Sanitary Engineering Division of the Public Health Service and the Technical Staff of the Committee on the Hygiene of Housing relative to means of facilitating the use of this technic by local officials who wish to use it. It is hoped that within the foreseeable future specially trained personnel from the Public Health Service will be available to state and local health officials to assist them in organizing local housing studies. In the meantime, the staff of the Committee on the Hygiene of Housing is available on a consultant basis to assist in setting up studies utilizing the new appraisal technic.

Success in any endeavor is not happenstance. Rather it is the result of planned application of known facts. The solution of the basic housing problem in this country is not to be found in the indiscriminate building of a tremendous number of dwellings. If we are agreed that one-third of the population is ill-housed, then we are faced with the fact that 15 million families need better housing. At present it would cost (at $1,200 per room) at least 90 billion dollars to provide enough new housing to meet this immediate need. To be realistic, it is unlikely that this much money will be spent for new dwellings during the next quarter of a century. It is essential, therefore, that a major part of the existing housing supply be rehabilitated and preserved if every American is to have satisfactory shelter within the foreseeable future. Do you or does anyone else in your community now know with reasonable exactness which houses should be torn down and which neighborhoods can be preserved?

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Microbiology of Spray-dried Whole Egg

II. Incidence and Types of Salmonella * †

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EARLY in 1942, the British Food Mission called attention to the fact that Salmonella were being isolated from dried egg powder received in the British Isles for food purposes. It emphasized the undesirability of such contamination in a food product. The British findings, however, were limited and restricted. In 1943, Seligmann, Saphra and Wassermann [1] reported the isolation of *Salmonella senftenberg* from a sample of egg powder. In the same year, Gibbons and Moore [2] reported the isolation of 9 types of Salmonella from Canadian spray-dried whole egg powder. This meager background of information made it clear that an investigation into the nature and extent of Salmonella contamination in dried egg should be undertaken.

The incidence and types of Salmonella found in spray-dried whole egg powder manufactured in the United States between September 1, 1943, and January 1, 1945, are presented in this paper. This is the second one dealing with the microbiology of powder having a high moisture content (4 to 6 per cent) and involving the same series of samples. U. S. Department of Agriculture and War Food Administration purchase specifications regulating the manufacture of powder for Lend-Lease shipment and the collection of samples for microbiological analyses have been cited previously.[3]

METHODS

Several procedures were tried for the isolation of Salmonella in egg powder, and the one described below was adopted for the major portion of the investigation.

Twenty-five and 50 ml. of a 1:10 dilution of egg powder (11 gm. in 99 ml. saline) were each introduced into 50 ml. of Selenite-F (B-B-L) enrichment broth and incubated for 18 to 24 hours at 37° C. Each dilution was then streaked out on three selective plate media: Shigella-Salmonella (SS) agar (Difco), bismuth sulfite agar (Difco), and desoxycholate-citrate agar (B-B-L). After 18 to 24 hours' incubation at 37° C. on the selective media, characteristic

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† Presented before the Laboratory Section of the American Public Health Association at the Seventy-fourth Annual Meeting in Cleveland, Ohio, November 12, 1946.

TABLE 1

Incidence of Salmonella in Spray-dried Whole Egg Powder

Number samples contributed by each plant	*Number plants contributing samples*	*Number samples examined*	*Number samples positive for Salmonella*	*Per cent samples positive for Salmonella*	*Range of Salmonella types isolated per plant*
1-25	45	518	164	31.7	0-7
26-50	30	1,098	338	30.8	1-11
51 or more	25	3,582	1,308	36.5	3-27
Total	100	5,198	1,810	34.8	0-27

single colonies of suspected Salmonella were transferred to tryptose broth. Kligler's Iron Agar (Difco) slants were inoculated from the 18 to 24 hour (37° C.) tryptose broth cultures. Those cultures characteristic of Salmonella on Kligler's were purified, and selected colonies were transferred to tryptose agar slants for maintenance of stock.

Although hydrogen sulfide production in Kligler's was one of the primary criteria for the preliminary identification of Salmonella, follow-ups were made on cultures which appeared to be Salmonella but apparently produced little or no hydrogen sulfide. Such organisms are comparatively rare; nevertheless several strains of *S. senftenberg* which produced no hydrogen sulfide were isolated.

From the tryptose agar slants, further tests required to confirm the preliminary identification of Salmonella were made, namely, motility (semi-solid agar and hanging drop), production of hydrogen sulfide and indol, liquefaction of gelatin, and the fermentation of lactose, sucrose, dextrose, salicin, maltose, mannitol, arabinose, xylose, inositol, and sorbitol. Cultures giving the characteristic biochemical reactions were tested for the "O" antigens (B, C_1, C_2, D, E). Final identification was based on the reactions of the antigenic components with known sera and with the aid of the Kauffmann-White schema.[4, 5]

RESULTS

A total of 5,198 samples of spray-dried whole egg powder were examined for the presence of organisms belonging to the Salmonella group. They were forwarded from 100 dehydration plants located in 26 states. Salmonella were isolated from 1,810 samples (35 per cent). Five hundred and sixty-two samples (11 per cent) were positive for *Salmonella pullorum*. Ninety-five plants contributed Salmonella-positive samples. Five plants failed to give Salmonella-positive samples; these plants, however, contributed a total of only 71 samples for examination.

Incidence and Types, by Plants—Table 1 lists the number of plants contributing samples of egg powder for examination, the number of samples examined, the number and percentage of samples positive for Salmonella, and the number of Salmonella types isolated. The plants were grouped for convenience according to the number of samples examined.

Forty-five plants each contributed 1 to 25 samples. Of 518 such samples examined, 164 (32 per cent) were positive for Salmonella. The number of Salmonella types found in samples from individual plants ranged from 0 to 7. Thirty-five plants in this group forwarded samples containing *S. pullorum*. In most instances in which there were only one or two positive samples from a plant, the samples contained *S. pullorum*.

Thirty plants contributed 26 to 50 samples each for Salmonella examination. Of 1,098 samples examined, 338 (31 per cent) were positive for Salmonella. The number of types obtained

TABLE 2

Incidence of Salmonella in Spray-dried Whole Egg Powder, by Individual Plants (Plants which forwarded 51 or more samples)

Plant No.	Number samples examined	Number samples positive for Salmonella	Types of Salmonella isolated	
			Number	Name
1	86	17	3	pullorum, oranienburg, give.
2	156	84	11	pullorum, oranienburg, newington, typhimurium, anatum, montevideo, bareilly, oslo, tennessee, worthington, cerro.
5	82	26	9	pullorum, montevideo, oranienburg, bareilly, anatum, typhimurium, newington, tennessee, meleagridis.
6	248	90	18	pullorum, oranienburg, cerro, urbana, montevideo, senftenberg, newport, georgia, anatum, tennessee, litchfield, worthington, bredeney, meleagridis, give, typhimurium, manhattan, bareilly.
11	64	43	17	pullorum, budapest, montevideo, poona, oranienburg, newport, braenderup, bareilly, oregon, london, anatum, rubislaw, new brunswick, javiana, paratyphi B, worthington, norwich.
13	545	170	27	pullorum, montevideo, anatum, oregon, senftenberg, derby, muenchen, rubislaw, typhimurium, oranienburg, tennessee, arechavaleta, newport, braenderup, meleagridis, newington, bareilly, litchfield, cerro, worthington, thompson, paratyphi B, manhattan, simsbury, minnesota, london, give.
14	111	70	16	pullorum, oranienburg, madelia, newport, montevideo, meleagridis, tennessee, give, bredeney, bareilly, anatum, cerro, kentucky, saint paul, worthington, london.
16	88	34	13	pullorum, montevideo, choleraesuis var. kunzendorf, give, kentucky, oranienburg, newport, senftenberg, typhimurium, simsbury, anatum, tennessee, javiana.
17	194	80	11	pullorum, meleagridis, london, senftenberg, anatum, oranienburg, vejle, montevideo, typhimurium, bareilly, tennessee.
18	146	22	6	pullorum, montevideo, bareilly, tennessee, oranienburg, derby.
19	64	45	16	pullorum, anatum, london, oranienburg, newport, meleagridis, typhimurium, typhimurium var. copenhagen, kentucky, rubislaw, newington, montevideo, california, minnesota, thompson, cerro.
20	72	35	9	pullorum, bareilly, typhimurium, typhimurium var. copenhagen, senftenberg, tennessee, cerro, lexington, oranienburg.
21	195	42	10	pullorum, typhimurium, tennessee, give, oranienburg, bareilly, montevideo, oregon, anatum, bredeney.
22	166	60	16	pullorum, derby, oranienburg, anatum, montevideo, senftenberg, bareilly, newport, london, give, worthington, typhimurium, lexington, rubislaw, tennessee, thompson.
23	117	32	8	pullorum, anatum, oranienburg, montevideo, typhimurium, tennessee, meleagridis, give.
24	234	62	12	pullorum, tennessee, give, london, derby, oranienburg, montevideo, typhimurium, meleagridis, anatum, bareilly, newington.
25	230	50	11	pullorum, montevideo, tennessee, oranienburg, oregon, manhattan, bareilly, anatum, give, new brunswick, meleagridis.
27	160	114	21	pullorum, montevideo, newport, oslo, oranienburg, anatum, bareilly, worthington, tennessee, derby, give, cerro, san diego, meleagridis, kottbus, oregon, gaminara, poona, javiana, newington, thompson.
28	127	38	13	pullorum, montevideo, bredeney, oranienburg, oregon, tennessee, anatum, london, cerro, panama, newport, newington, derby.
30	122	21	6	pullorum, montevideo, tennessee, oranienburg, london, thompson.
31	58	10	5	pullorum, bareilly, oranienburg, typhimurium, typhimurium var. copenhagen.
32	96	56	10	pullorum, oranienburg, tennessee, madelia, pomona, montevideo, bareilly, anatum, typhimurium, derby.
37	78	40	13	pullorum, montevideo, senftenberg, oranienburg, newington, thompson, anatum, tennessee, meleagridis, typhimurium, minnesota, london, give.
40	72	32	9	pullorum, tennessee, oranienburg, typhimurium, bareilly, senftenberg, bredeney, montevideo, meleagridis.
42	71	35	13	pullorum, bareilly, montevideo, potsdam, newport, oranienburg, minnesota, worthington, manhattan, meleagridis, anatum, typhimurium var. copenhagen, horsham.
Total	3,582	1,308		

from the individual plants within this second group ranged from 1 to 11. All but 3 of the 30 plants contributed one or more samples which contained *S. pullorum*. *S. pullorum* was the only type isolated from 5 positive samples received from one plant. In contrast, 11 types were isolated from 24 positive samples received from another plant.

Twenty-five plants each contributed 51 or more samples for Salmonella examination. The 3,582 samples examined from plants within this third group represent 69 per cent of all the samples examined. Salmonella were isolated from 1,308 (37 per cent) of the samples. The number of Salmonella types isolated from the individual plants ranged from 3 to 27. Table 2 lists the plants within this group, the number of samples examined from each plant, the number positive for Salmonella, and the number and types of Salmonella isolated. It may be seen that each of the plants furnished one or more *pullorum*-positive samples. Eight plants—1, 18, 21, 23, 24, 25, 30, 31—had Salmonella contamination in less than 30 per cent of the samples. Ten plants—5, 6, 13, 16, 17, 20, 22, 28, 40, 42—had Salmonella contamination in 31 to 50 per cent of the samples. In 7 plants—2, 11, 14, 19, 27, 32, 37—more than 50 per cent of the samples were contaminated with Salmonella.

One hundred and fourteen (71 per cent) of 160 samples from plant 27 contained Salmonella representing 22 types. Plant 13 contributed the largest number of samples for examination. Of 545 samples examined, 170 (31 per cent) were positive for Salmonella. Despite a comparatively low incidence, the largest number of Salmonella types (27) were isolated from samples contributed by this plant.

Incidence and Types, by Months—The percentage contamination from June through December, 1944, was greater than that for the preceding 9 month period (Table 3). The peak of the contamination (52 per cent) was reached in August–September, 1944. In general, Salmonella-positive samples were more frequently encountered during the warm summer months; the percentage of samples contaminated for the months of July, August, and September,

TABLE 3

Incidence of Salmonella in Spray-dried Whole Egg Powder, by Months

Month	Number plants contributing samples	Number samples examined	Samples positive for Salmonella					
			S. pullorum		Other types		All types	
			No.	%	No.	%	No.	%
1943								
Sept.	14	124	2	1.6	13	10.5	15	12.1
Oct.	29	212	0	0	55	25.9	55	25.9
Nov.	29	320	0	0	84	26.3	84	26.3
Dec.	29	208	2	1.0	51	24.5	53	25.5
1944								
Jan.	67	398	46	11.6	58	14.6	104	26.2
Feb.	78	608	135	22.2	101	16.6	236	38.8
Mar.	52	315	56	17.8	31	9.8	87	27.6
Apr.	64	523	86	16.4	70	13.4	156	29.8
May	66	517	56	10.8	86	16.6	142	27.4
June	62	391	44	11.3	105	26.9	149	38.2
July	56	327	24	7.3	122	37.3	146	44.6
Aug.	41	366	44	12.0	145	39.6	189	51.6
Sept.	38	273	14	5.1	128	46.9	142	52.0
Oct.	54	264	21	8.0	85	32.2	106	40.2
Nov.	41	219	18	8.2	65	29.7	83	37.9
Dec.	27	133	14	10.5	49	36.8	63	47.3
Total	100	5,198	562	10.8	1,248	24.0	1,810	34.8

TABLE 4

Incidence of Salmonella in Spray-dried Whole Egg Powder, by U. S. Divisions

Divisions	Number plants contributing samples	Number samples examined	Samples positive for Salmonella: S. pullorum No.	S. pullorum %	Other types No.	Other types %	All types No.	All types %
North Atlantic (N. Y. and Pa.)	5	91	14	15.4	6	6.6	20	22.0
East North Central (Ohio, Ind., Ill., Mich. and Wis.)	26	1,357	170	12.5	274	20.1	444	32.6
West North Central (Minn., Iowa, Mo., N. Dak., S. Dak., Nebr. and Kans.)	40	1,563	189	12.1	255	16.3	444	28.4
South Atlantic (N. Carolina)	1	41	5	12.2	0	0	5	12.2
South Central (Ky., Tenn., Ala., Miss., Ark., La., Okla. and Tex.)	24	1,873	156	8.3	611	32.6	767	40.9
Western (Colo., N. Mex. and Wash.)	4	273	28	10.3	102	37.4	130	47.7
Total	100	5,198	562	10.8	1,248	24.0	1,810	34.8

were 45, 52, and 52, respectively. *S. pullorum* contamination was high in samples examined during February (22 per cent), March (18 per cent), and April (16 per cent). No satisfactory explanation was apparent for this finding.

It is difficult to discern any parallelism in trends in 1943 and 1944 during the months of September, October, November, and December. In so far as the data go, the incidence of Salmonella contamination was considerably lower for these four months in 1943 than in 1944. The comparatively low percentage (12 per cent) of contamination for September, 1943, may be attributed to the fact that only one gram of powder from each sample was tested during this particular month. In all later months, 2½ and 5 gm. quantities of powder were tested.

Incidence and Types, by U. S. Divisions—Table 4 shows that the South Central and Western divisions furnished samples having the highest incidence of Salmonella contamination (41 and 48 per cent). It may be observed, however, that not only were fewer plants located in the North Atlantic, South Atlantic, and Western divisions, but also fewer samples of powder were examined from these areas. The findings, therefore, do not adequately reflect the quality of the eggs processed or the operations of plants located in these divisions.

Incidence, by Age of Samples—The number and percentage of Salmonella-positive samples are arranged in Table 5 according to the age (in days) of the samples. No appreciable effect of age, up through 17 days, on the incidence of Salmonella could be observed. Of 124

TABLE 5

Incidence of Salmonella in Spray-dried Whole Egg Powder, According to Age of Samples

Age (days)	Number samples examined	Samples positive for Salmonella: No.	%
2	10	1	10.0
3	49	18	36.7
4	164	60	36.6
5	391	136	34.8
6	694	254	36.6
7	822	277	33.7
8	656	238	36.3
9	536	172	32.1
10	442	160	36.2
11	367	113	30.8
12	256	96	37.5
13	183	54	29.5
14	97	21	21.7
15	45	19	42.2
16	54	22	40.7
17	50	19	38.0

samples of powder of various ages between 18 and 43 days, 35 (28 per cent) were positive for Salmonella. It would seem, therefore, that death of Salmonella organisms in egg powder is slower than might be expected.

Salmonella Type Distribution—Nineteen hundred and sixty-nine isolations of Salmonella were made from 1,810 positive powder samples. These isolations yielded 52 Salmonella types, which are listed in Table 6 according to frequency of distribution. Five types, *S. pullorum*, *S. oranienburg*, *S. montevideo*, *S. tennessee*, and *S. anatum*, comprised 73 per cent of the total isolations. The next 10 types in order of frequency comprised 19 per cent of the total isolations, and the remaining 37 types 8 per cent.

The numbers of Salmonella isolations and types in each antigenic group are given in Table 7. The largest number of isolations, 829 (42 per cent), were members of the C_1 group, the next largest number, 570 (29 per cent), were members of the D group, followed by groups E_1, B, C_2, E_3, E_2 and F (further groups), respectively. The number in the B group was surprisingly low. Although *S. typhimurium* was the most commonly isolated member of this group, it was only seventh in the frequency distribution of the types isolated from egg powder (Table 6). Ninety-five per cent of the isolations fell within the 5 basic antigenic groups (B, C_1, C_2, D, E).

In Table 8 the distribution of Salmonella types isolated from spray-dried whole egg with a high moisture content in this study and from egg and egg products in field studies[6] is compared with

TABLE 6

Distribution of Salmonella Types Isolated from Spray-dried Whole Egg Powder

Type	*Number of isolations*	*Percent of total isolations*
pullorum	562	28.5
oranienburg	370	18.7
montevideo	210	10.6
tennessee	160	8.1
anatum	132	6.7
bareilly	73	3.7
typhimurium	56	2.8
meleagridis	47	2.4
senftenberg	37	1.9
newport	33	1.7
give	29	1.5
london	28	1.4
newington	28	1.4
derby	25	1.3
rubislaw	22	1.1
cerro	17	0.9
oregon	17	0.9
worthington	16	0.8
minnesota	10	0.5
urbana	7	0.4
paratyphi B	7	0.4
javiana	7	0.4
bredeney	7	0.4
thompson	7	0.4
kentucky	6	0.3
manhattan	6	0.3
poona	4	0.2
typhimurium var. copenhagen	4	0.2
madelia	3	
oslo	3	
lexington	3	
litchfield	3	
georgia	3	
california	3	
san diego	3	
braenderup	2	
arechavaleta	2	
new brunswick	2	
simsbury	2	
saint paul	1	
budapest	1	
choleraesuis var. kunzendorf.	1	
gaminara	1	
kottbus	1	
muenchen	1	
muenster	1	
panama	1	
paratyphi B. var. odense	1	
pomona	1	
vejle	1	
horsham	1	
norwich	1	
Total	1,969	

TABLE 7

Frequency of Isolation of Salmonella Types from Spray-dried Whole Egg Powder, Tabulated by Antigenic Groups

Antigenic group	*Number of types isolated*	*Number of isolations*	*Percent of total isolations*
B	11	110	5.6
C_1	9	829	42.1
C_2	6	61	3.1
D	3	570	28.9
E_1	7	241	12.2
E_2	2	30	1.5
E_3	2	39	2.0
F*	12	89	4.5
Total	52	1,969	

*F = Further groups.

the distribution of types found in human, poultry, and animal infections as reported by Edwards and Bruner [7] and Seligmann, Saphra, and Wassermann.[1] Edwards and Bruner's survey was based on the analyses of 3,090 cultures of Salmonella isolated from 2,285 outbreaks in man, poultry, and animals in the United States between 1934 and 1941. Seligmann, Saphra, and Wassermann analyzed 1,000 cases of human Salmonella infections (not including *Salmonella typhi*) identified and studied in the period between 1939 and 1943. With the exception of *Salmonella paratyphi* A, only the Salmonella types isolated from spray-dried whole egg in this study (MRD)* are listed in the table. The frequency of isolation of each type is recorded for egg and non-egg studies. Types found in non-egg studies but not in egg powder have been listed in each group as "others."

Table 8 shows that many of the Salmonella types found in egg powder are identical with types isolated from animal, poultry, and human sources. The majority of the types reported in the non-egg studies are among those reported in the dried egg study (MRD), that is, 38 of the 59 types identified at the Lexington Center,† and 26 of the 38 types identified at the New York City Center.‡ It may further be observed that the types isolated with greatest frequency in any one of the studies are in most instances common to the others.

Group A—*S. paratyphi* A, the only type in Group A, was not isolated from egg powder. Presumably it is one of the few types which have exhibited a greater adaptation for the human host. Aside from *S. typhi*, the majority of the types in the other groups usually give rise to gastroenteritis (food poisoning), but as Seligmann, *et al.*[1] have stated "every Salmonella is potentially capable of producing every one of these groups of clinical processes," that is, gastroenteritis, localized processes, typhoid-like symptoms, and symptoms of septicemia without localizing signs, fatalities, and the asymptomatic carrier state.

Group B—Five per cent of the isolations from egg powder (MRD) belonged to Group B. *S. typhimurium* was the most frequently encountered of the 11 types within this group and made up 3 per cent of the identified cultures. *S. typhimurium* was the only member of Group B reported in Canadian egg powder.[2] Group B isolations were considerably higher in the non-egg studies, 43 per cent and 49 per cent, respectively. Again, *S. typhimurium* was largely responsible for these high percentages. It made up 27 per cent of the Lexington Center's isolations [7] and 37 per cent of the New York City Center's isolations.[1] *S. derby* and *S. paratyphi* B were also isolated more frequently from animals, poultry, and humans than from egg powder.[7, 1]

Group C ($C_1 + C_2$)—Approximately 45 per cent of the typed cultures from egg powder (MRD) belonged to the C group. This is the major group in so far as the dried egg findings are concerned. Although 16 types were identified, 5 types—*S. oranienburg*, *S. montevideo*, *S. tennessee*, and *S. bareilly* of subgroup C_1 and *S. newport* of subgroup C_2—comprised 43 per cent of the identified cultures. The relatively high distribution of these 5 types in the Lexington survey may probably be explained by the fact that it included numerous isolations from poultry and animals. With the exception of *S. newport*, they were less frequently encountered in man. *S. newport* was encountered in 3 and 9 per cent of the isolations in both non-egg studies. *S. choleraesuis* and *S. choleraesuis* var. *kunzendorf* were isolated with

* MRD = Microbiology Research Division.

† Lexington, Ky., Salmonella Typing Center. Kentucky Agricultural Experiment Station. Dr. P. R. Edwards, Director.

‡ New York City Salmonella Typing Center. Beth Israel Hospital. Dr. E. Seligmann, Director.

TABLE 8

Comparative Frequency Distribution of Salmonella Types from Spray-dried Whole Egg Powder and from Animal, Poultry, and Human Sources

		Solowey, McFarlane, Spaulding & Chemerda	*Solowey Spaulding & Goresline*[6]	*Gibbons and Moore*[2]	*Edwards and Bruner*[7]			*Seligmann Saphra and Wassermann*[1]
		Spray-dried whole egg powder	*Shell, liquid and spray-dried whole egg powder*	*Spray-dried whole egg powder*	*Animal, poultry, and human infections*			*Human infections*
					Lexington, Ky., Center 1934-1941			*New York City Center*
Group	*Type*	*MRD** 1943-1944	*Field studies* 1944	*Canada* 1942-1943	*Animal and Poultry*	*Human*	*Total*	1939-1943
A	paratyphi A				0	7	7	14
	Per cent†					1.3	0.2	1.4
	typhimurium	56	5	3	789	60	849	369
	derby	25	5		66	4	70	27
	para B	7			6	78	84	87
	bredeney	7			40	8	48	3
	typhimurium var copenhagen	4	2		142	3	145	
	arechavaleta	2				1	1	
B	saint paul	1			1	3	4	1
	budapest	1						
	california	3			25	1	26	
	para B var. odense	1						
	san diego	3			4	13	17	1
	others		4		29	56	85	4
	Total	110	16	3	1,102	227	1,329	492
	Per cent†	5.5	5.8	10.0	43.0	42.5	43.0	49.2
	oranienburg	370	117	4	34	18	52	68
	montevideo	210	23		17	24	41	48
	tennessee	160	31			2	2	
	bareilly	73	13	11	59	13	72	18
	oslo	3						
C_1	thompson	7		2	1	4	5	4
	braenderup	2						
	georgia	3						
	cholerasuis var. kunzendorf	1			301	28	329	90
	others		2	1	29	3	32	3
	Total	829	186	18	441	92	533	231
	Per cent†	42.0	67.2	60.0	17.2	17.3	17.3	23.1
	newport	33		1	32	53	85	93
	oregon	17			7	3	10	
	manhattan	6		1	5	2	7	1
C_2	litchfield	3			1	2	3	2
	kottbus	1						
	muenchen	1			2		2	10
	others				2	1	3	1
	Total	61		2	49	61	110	107
	Per cent†	3.1		6.6	1.9	11.4	3.6	10.7
	pullorum	562	49	5	500	2	502	
D	javiana	7				2	2	
	panama	1			7	27	34	35
	others				149	38	187	34
	Total	570	49	5	656	69	725	69
	Per cent†	29.1	17.7	16.6	25.6	12.9	23.5	6.9
	anatum	132	4		83	12	95	27
	meleagridis	47	7		18	3	21	4
	give	29	3		33	8	41	13
E_1	london	28			1		1	3
	lexington	3			1		1	
	muenster	1						
	vejle	1						
	others							
	Total	241	14		136	23	159	47
	Per cent†	12.1	5.1		5.4	4.3	5.2	4.7

TABLE 8 — *Continued*

Group	Type	*Solowey, McFarlane, Spaulding & Chemerda*	*Solowey Spaulding & Goresline*[5]	*Gibbons and Moore*[2]	*Edwards and Bruner*[7]			*Seligmann Saphra and Wassermann*[1]
		Spray-dried whole egg powder	*Shell, liquid and spray-dried whole egg powder*	*Spray-dried whole egg powder*	*Animal, poultry, and human infections*			*Human infections*
					Lexington, Ky., Center 1934-1941			*New York City Center*
		*MRD** 1943-1944	*Field studies* 1944	*Canada* 1942-1943	*Animal and Poultry*	*Human*	*Total*	1939-1943
E_2	newington	28			28	37	65	4
	new brunswick	2			43		43	
	others				7		7	
	Total	30			78	37	115	4
	Per cent†	1.5			3.1	6.9	3.7	0.4
E_3	senftenberg	37			48	11	59	9
	simsbury	2				1	1	
	others							
	Total	39			48	12	60	9
	Per cent†	2.0			1.9	2.3	1.9	0.9
F	rubislaw	22			1		1	
	cerro	17	2		2		2	
	worthington	16	3		21	2	23	4
	minnesota	10	1	2	5		5	
	urbana	7			2		2	8
	kentucky	6	4		6	2	8	9
	poona	4						2
	madelia	3						
	gaminara	1						
	pomona	1						
	horsham	1						
	norwich	1						
	others				10	1	11	4
	Total	89	10	2	47	5	52	27
	Per cent†	4.5	3.6	6.6	1.8	0.9	1.7	2.7
	Grand total Identified	1,969	287	30	2,557	533	3,090	1,000
	No. of types	52	18	11			59	38
	No. of types in common with Dried Whole Egg	52	16	10			38	26
	Unidentified	6						

*MRD = Microbiology Research Division.
†Per cent of total isolations.

great frequency only in the non-egg studies.

Group D—Three D types made up 29 per cent of the dried egg isolations (MRD). The D group, which is the second largest for dried eggs, owes its size to the number of isolations of *S. pullorum*. A similarly large percentage for this group (24 per cent) was reported in the Lexington survey. *S. pullorum* owes its prominence in the dried egg and Lexington studies to the fact that it is primarily a poultry pathogen. It has been encountered in man, however.[7-9] The total D isolations for the New York City Center was 7 per cent, a figure decidedly lower than that reported for the other studies.

Group E ($E_1 + E_2 + E_3$)—Sixteen per cent of the dried egg isolations (MRD), comprising 11 types, belonged to group E. Distribution reported for the Lexington and New York City Centers was 11 and 6 per cent, respectively.

Group F—Approximately 5 per cent of the dried egg isolations (MRD), com-

prising 12 types, belonged to group F. Distribution reported for the Lexington and New York City Centers was 2 and 3 per cent, respectively.

The distributions in the B, C, D, E, and F groups of the Salmonella isolated by Gibbons and Moore[2] and by Solowey, *et al.*[6] during field studies correspond closely with the distribution found in powder having a high moisture content (Tables 7 and 8).

DISCUSSION

The investigation reported here has been of necessity limited to a qualitative study of the incidence, types, and distribution of Salmonella found in spray-dried whole egg. Nevertheless, it has brought out evidence that the Salmonella types isolated from egg powder have the same morphological and cultural characteristics and give the same biochemical and serological reactions as types isolated from infected humans.[2, 9, 10–13] It should be kept in mind, however, that the methods used for the isolation of Salmonella from egg powder were not radically different from methods employed for Salmonella isolation from other sources. Although three selective media were used in the isolation of Salmonella, bismuth sulfite agar was as satisfactory as SS agar for the various Salmonella types, and apparently better for the isolation of *S. pullorum*. Most of the latter were isolated from bismuth sulfite agar.

The Salmonella contaminations reached a peak during the summer. This is in line with general information concerning the poorer quality of shell eggs marketed during this time of year. The fact that the percentages of samples contaminated during the fall were also high may be attributed, in part at least, to the use of frozen and storage shell egg liquid obtained from substandard shell eggs and/or from improperly frozen and improperly stored summer surpluses of shell eggs.

It is difficult to assess the significance of such factors as temperature, humidity, and type of soil in establishing a causal relationship with Salmonella contamination. Very little is known concerning the source and quality of the raw material used by the individual plants or the relative effects of different processing methods on microbial destruction. Actually, some of the plants whose samples showed a high incidence of contamination were located in areas characterized by high temperature, high total precipitation, and specific kinds of soils. However, it is not possible to attribute with exactitude the high incidence of contamination to the environmental factors cited. In order to evaluate the facts, more complete histories than those hitherto given must be made available with the samples to be examined.

The dangers arising from the consumption of raw and incompletely cooked duck eggs are well known and accepted. Adequate proof that hens' eggs may be similarly infected is still lacking. A recent direct accusation of hens' eggs in this country has been made by Watt.[14] He investigated an outbreak of salmonellosis (*S. montevideo*) aboard a merchant vessel which affected 28 individuals in a crew of 70. "Epidemiological evidence indicated that infection resulted from the consumption of contaminated egg salad, the mayonnaise of which contained raw eggs. The same Salmonella type, *S. montevideo*, was isolated from two cases of shell eggs obtained on the ship. Internal contamination of the eggs was demonstrated, since the shell washings before sterilization were free of *S. montevideo*, and egg meats obtained after sterilization of shells were found to contain this organism."

S. pullorum is one of the types hitherto ignored to some extent in egg products for human consumption because it has always been assumed to be non-pathogenic for man. In the last

few years, however, it has been isolated from infected human beings.[7–9] The presence of *S. pullorum* in cases of gostroenteritis is probably more widespread than is realized, but because of its fastidious growth requirements and slightly different morphological characteristics on selective media, it is not isolated from infected material with the same facility as other members of the Salmonella group.

There is no evidence in the data that any Salmonella type occurs more frequently in powder produced in one locality in the United States than in any other. Moreover, there is no evidence that any Salmonella type is specific to egg powder. On the other hand, the percentages of the types within the major groups appear to be different from those found for the other frequency distributions cited. It may be reasonably assumed that a similar distribution might be encountered only in the examination of poultry and poultry products.

Borman pointed out that the "number of Salmonella types that occur exclusively in man or animals is diminishing." This statement has been amply confirmed by the investigators cited. The pathogenicity of the strains isolated from dried egg is as yet undetermined. Various arguments have been set forth that (1) the organisms may be present in too few numbers to initiate infection, (2) they may have been attenuated by heat, and (3) contaminated powder has not been cited in the literature as a cause of Salmonella infections. Nevertheless, although the validity of these statements is admitted, the presence of Salmonella organisms in this food product constitutes a potential hazard, especially with respect to the treatment of reconstituted powder.

The presence of such a wide variety of Salmonella types in spray-dried whole egg powder is evidence *per se* that the drying process as utilized in the manufacture of high moisture (4–6 per cent) powder does not destroy the organisms. That powder of low moisture content (not exceeding 2 per cent) still contains Salmonella is indicated in the work of Schneider[15, 16] who reported the isolation of five Salmonella types, *S. pullorum, S. oranienburg, S. tennessee, S. oregon,* and *S. montevideo,* from samples of such powder. Our own investigations of low-moisture powder (unpublished data) indicate that Salmonella are not entirely eliminated.

SUMMARY

Salmonella were isolated from 35 per cent of 5,198 samples of spray-dried whole egg powder obtained from 100 dehydration plants between September, 1943, and January, 1945. Incidence of Salmonella in samples examined from individual plants ranged from 0 to 71 per cent. Fifty-two Salmonella types were identified, five of which, *S. pullorum, S. oranienburg, S. montevideo, S. tennessee,* and *S. anatum,* made up 73 per cent of the isolations. Culturally, morphologically, biochemically, and serologically the 52 types are in every way similar to those isolated from human beings and animals. The types that occur with greater frequency in dried eggs are among those that commonly occur in human and animal infections. The frequency distribution of the Salmonella types isolated from dried eggs is not the same as that of the types isolated from human beings.

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Proposed National Heart Disease Institute

On June 9, Congressman Javits of New York, introduced a bill in the United States Congress providing for the creation of a National Heart Disease Institute within the U. S. Public Health Service. Such an institute would provide for research and the development of more effective methods of prevention, diagnosis, and treatment of the diseases of the heart and circulation. The bill was referred to the Committee on Interstate and Foreign Commerce.

The Board of Directors of the American Heart Association unanimously approved the bill at a meeting held in conjunction with the 23rd annual meeting of the Association in Atlantic City in June.

Shellfish*

Engineering Section

THE Shellfish Committee of the Engineering Section met in New York City on the morning of June 4, 1946. A joint luncheon and afternoon meeting was held on this same date with the Committee on Standard Methods for the Examination of Shellfish. This was the first meeting of the committee in two years, because of travel restrictions in 1945.

Since the time of the last meeting the Public Health Service has adopted and placed in operation the new *Manual of Recommended Practice for the Sanitary Control of the Shellfish Industry*. Much of the discussion at the 1946 meeting therefore had to do with this *Manual*. In reporting on these subjects the same order will be followed as that occurring in the *Manual*. Reference numbers where used refer to *Manual* numbers. In addition to the discussion of the *Manual* some other subjects were considered. These included recent food and drug activities and some new developments within the industry.

U. S. PUBLIC HEALTH SERVICE MANUAL OF RECOMMENDED PRACTICE FOR THE SANITARY CONTROL OF THE SHELLFISH INDUSTRY

Definitions (1)—The committee was of the opinion that in view of the rapid development of some quick frozen foods, using raw or partially cooked shellfish, the definition of "shellfish" appearing on page 5 should be revised. It is recommended that this definition be changed to read as follows:

Shellfish: Shellfish means all fresh or frozen oysters, clams, or mussels either shucked or in the shell, and any fresh or frozen or incompletely sterilized edible products thereof.

It is apparent from the above recommendation that the committee believes that the frozen food industry handling shellfish products should be under the same sanitary supervision and control as the fresh or unprocessed shellfish industry. Processed or canned shellfish, where the processing or canning results in a sterile product, have always been exempt from the control of the Public Health Service and are the responsibility of the Food and Drug Administration. Likewise, where frozen foods contain completely processed or sterilized shellfish products before freezing, such frozen foods will become exclusively the responsibility of the Food and Drug Administration. The Public Health Service and the State Regulatory Authorities responsible for fresh shellfish sanitation will, however, be responsible for frozen foods containing raw or partially cooked shellfish.

BACTERIOLOGICAL EXAMINATION OF SHELLFISH AND SHELLFISH WATERS

(3.3)—As indicated in the opening paragraph, the Engineering committee met jointly with the Laboratory committee to consider some problems com-

* Progress Report of the Committee on Shellfish.
COMMITTEE ON SHELLFISH (Engineering Section)
Organized 1928. Published reports: *Year Books* 1934–1935, 1935–1936, 1936–1937, 1937–1938, 1938–1939, 1939–1940, 1940–1941, *A.J.P.H.*, July, 1944, July, 1945.

mon to both. During the morning the Laboratory committee had held a separate meeting. It is believed that some revisions in the recently adopted "Standard Methods" for the examination of shellfish and shellfish waters are contemplated as a result of these meetings. Basically, however, the methods will remain unchanged. It was the opinion of the joint committees, however, that the limiting standards set forth in the *Manual* were not satisfactory and should be changed as quickly as possible. No conclusions could be reached at the June meetings as to how they should be changed.

This matter of satisfactory and suitable limiting standards for the sanitary quality of shellfish and shellfish waters has always been a troublesome problem. There seems to be a general agreement on the limiting bacteriological standards for the quality of shellfish waters, although even this is not unanimous. But when the question of limiting bacteriological standards for shellfish is considered, there seems to be little if any agreement. Now, with the added problem of setting up practical standards for frozen shellfish and shellfish products, the question of standards becomes even more complex. The joint committees realize the extent of this problem and have decided to meet again in Cleveland for further discussion of this particular subject. It is hoped that out of this meeting there will be developed some reasonable, practicable and much needed bacteriological standards for the shellfish industry.

Cleansing (4.2)—Although this subject was not discussed at the meeting, nevertheless it is desirable that the committee carefully consider recent developments by the Fish and Wildlife Service which indicate that some of our former concepts on this subject may be in need of revision. This may also be true in the case of *Floating* (4.5).

Bactericidal Treatment (4.21)—It is often difficult to get a sufficient supply of hot water or live steam in shucking and packing plants to insure sterilization of equipment. Recently a new piece of equipment has been tried to overcome this difficulty. This equipment is used extensively in garages for cleaning motors. It is a kerosene burner that produces an almost instantaneous and continuous stream of steam under pressure. The machine is small, compact, and portable. It requires only connections to a water supply and an electric outlet. Various lengths of steam hose and several types of nozzles come with the machine. Final tests of the efficiency of this machine have not yet been made, but its use under certain conditions seems promising.

Shipping Containers (4.29) — The post-war development of air transport for shellfish and the expanded frozen food activities will bring about new and as yet untried shipping containers. Some firms have already been experimenting with pliofilm packages. In any event the more extensive use of individual consumer packages appears to be in the offing. The committee welcomes this development and believes it should encourage the use of such packages in the interest of giving the consumer better shellfish.

The proper identification of such consumer packages containing fresh or frozen shellfish does not seem to be fully covered in the *Manual*. It is the committee's recommendation that such packages should show clearly on their labels the following information:

1. The name and address of the packer or distributor.
2. A statement of the true contents of the package.
3. The certificate number of the shucker or packer, preceded by state abbreviations.
4. The date of packing. This may be in code and such a coding should have some reference to the lot packed which would show upon examination of the records of the packer the source of such shellfish and date shucked.

Packing and Shipping Shell Stock (4.39)—In the mussel producing areas some difficulty has been experienced in obtaining a satisfactory shipping container. The use of burlap bags commonly used in the shipment of other types of shellfish is unsatisfactory for mussels. Mussels begin to drain rapidly soon after removal from the water and this drainage is soaked up by such bags resulting in increased growths of bacteria which are in turn further drained into lower layers of the mussels. Mussels showing satisfactory concentrations of bacteria when taken from good areas are therefore quite often found to contain excessive bacteria when they reach the market. This is particularly true in warm weather. It is recommended that the use of such bags in the shipment of mussels be prohibited.

Identification of Shell Stock on the Market (4.40)—As required in the *Manual*, shell stock should bear a tag on each container showing:

1. The name and address of the shipper with his state certificate number preceded by the state abbreviation.
2. The name and address of the consignee.
3. A statement of the kind and quantity of shellfish in the container.
4. The date of shipment, coded or un-coded.

In addition to these items the committee believes such tags should show the *source* of such shellfish. This information should be tied down to as small an area as possible.

NEW MACHINES FOR SHUCKING OYSTERS

During the meetings of the committee and the later meetings of the Oyster Institute, demonstrations were given of two recently developed machines for the mechanical opening of oysters. One of these machines shears the adductor muscle from one shell and leaves the oyster attached to the other shell. The second machine operates very much the same as the mechanical potato peeler. It would not seem that either machine at this stage of development could replace the hand opening in commercial shucking plants, but the shearing machine might be useful in opening oysters for laboratory examination. Either machine would be helpful in the opening of oysters in restaurants for half shell trade.

PROCESSED OR CANNED SHELLFISH

Although the Public Health Service is not concerned with processed or canned shellfish because these products come under the Food and Drug Administration, nevertheless, the committee believes that only shellfish of good sanitary quality should be used in such packages. It is desirable to have such containers bear some lot or code number which would permit the tracing of their contents to their origin.

USE OF SHELL LIQUOR

From time to time attempts have been made by some packers to save and process or sell shell liquor drained from shellfish during the opening process. The committee is of the opinion that while such a practice might meet the requirements of the *Manual*, it is more than likely it would not and therefore it should be discouraged. If, however, such a practice is undertaken it is thought that the Food and Drug Administration must define its limitations. In such cases consideration should also be given to the pasteurization of such liquors.

FOOD AND DRUG ADMINISTRATION

Activities of the Food and Drug Administration were outlined for the committees by Glen D. Slocum with particular reference to the proposed establishment of standards of identity. These standards are being established for the purpose of:

1. Decreasing to a minimum the time the shellfish are in contact with fresh water.

2. Assuring adequate drainage after washing.
3. Obtaining uniform sizes for consumer protection.

It will be noted that such standards of identity have already been established and go into effect on January 1, 1947.

IMPORTATION OF SHELLFISH

Although the listing of Canadian shippers by the U. S. Public Health Service was discontinued some years ago there has been no satisfactory substitute provided by any federal agency. Many foreign countries are trying to ship shellfish into this country, and there fails to exist today any legal means for accepting such shipments other than the "after arrival" procedure of the Food and Drug Administration. From a public health point of view such a procedure is unsatisfactory. The committee recommends that the Public Health Service investigate the possibility of once more arranging for the listing of the shippers of such countries as may carry out a control program at the source of supply comparable with our program in this country. It has been suggested that such a program might become a function of the World Health Organization.

SCORE SHEETS

The committee believes that a satisfactory score sheet for the evaluation of both shellfish plants and state control measures has not yet been developed, and would welcome suggested sheets for future consideration.

GENERAL COMMITTEE RECOMMENDATION

The committee endorses the new Public Health Service *Manual* in principle and recommends that the Public Health Service extend, if possible, its shellfish sanitation program along three principal lines of endeavor as follows:

1. Provide for a full-time sanitary engineer to engage in shellfish sanitation work in each district.
2. Provide for continuous research and technical study of shellfish sanitation problems.
3. Stimulate or carry out some effective educational program in the consuming areas for the purpose of eliminating unsatisfactory practices, particularly on the part of retailers.

ADDENDUM

The joint committee meeting took place in Cleveland on November 11, 1946. The following were agreed upon:

1. That within the limits of our present knowledge the procedure outlined in the *Manual* for determining classes of shellfish areas based on sanitary surveys and coliform results is generally satisfactory.
2. That any recommended changes in limiting bacteriological standards for shellfish or shellfish products must be based on factual data.
3. That such factual data are not available and, consequently, no changes are now being recommended for shellfish standards although the committees believe that the shellfish standards now appearing in the *Manual* are inadequate and must be revised as soon as factual data permit.

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Cheese and Its Relation to Disease*

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CHEESE is a standard item of diet and rates very high among foods from a nutritive standpoint. It is therefore important that it should be surrounded with all the necessary sanitary safeguards to insure a product free of disease germs. Cheese like other dairy products such as ice cream and butter does not receive the attention from public health officials that it merits. However, the long list of epidemics of disease traced to it [1,2] within recent years has awakened those responsible for the health of the people to the need of sanitary regulations governing its manufacture and sale.

EPIDEMICS TRACED TO CHEESE

A list of epidemics traced to cheese since 1883 has been compiled from the literature and various other sources and is presented in Table 1. A summary of these data shows that during this time there has been a total of 59 epidemics with 2,904 cases of disease and 117 deaths. While this total is sufficiently impressive to convince even the most skeptical, there is every reason to believe that this represents only a fraction of the total. After the epidemics reported by Baker [1] in Michigan during 1883–1884, there were no more epidemics recorded until 1893, after which there was a lapse of 21 years before another epidemic was reported. Thereafter, only an occasional epidemic due to cheese was reported in the literature until 1932 when the big epidemic occurred in Quebec with 627 cases and 57 deaths. This epidemic seems to have made public health officials conscious of the fact that cheese may be an important vehicle for the transmission of disease, and from that time on we find one or more epidemics reported each year except in 1933.

From 1935 to 1945, 40 epidemics were reported involving 1,741 cases and 47 deaths, which is over twice as many epidemics as the 19 which were reported in the previous 42 years. Such figures as these lead one to suspect strongly that during this time cheese had been overlooked as a source of disease.

While no attempt has been made to make a thorough search of the foreign literature for epidemics due to cheese, a partial list of such epidemics is recorded in Table 2. From 1901 to 1944 inclusive, 16 epidemics involving 526 cases and 2 deaths have been tabulated.

An analysis of the data in Table 1 shows that the most frequently reported disease is food poisoning which accounted for 35, or 61 per cent, of the 59 epidemics with 1,389 cases, or 47.9 per cent of the total 2,904 cases reported. Next in order comes typhoid fever with 16, or 27 per cent of the total number of epidemics. Although typhoid fever was responsible for only 27 per cent of the epidemics, it accounted for 1,354, or 46.6 per cent of the total

* Presented before the Laboratory Section of the American Public Health Association at the Seventy-fourth Annual Meeting in Cleveland, Ohio, November 13, 1946.

TABLE 1

Outbreaks of Disease Traced to Cheese in the United States and Canada from 1883 to 1946

Disease	*Place*	*Date*	*Cases*	*Deaths*	*Kind of Cheese*	*Reference*	*Remarks*
Food poisoning	Hubbardston and Oxford. Mich.	Aug., 1883	14–15	0	Cheddar	Baker [1]	Cheese made in Ohio.
Food poisoning	Middleville, Mich.	May, 1884	50–60	—	"	Baker [1]	New cheese made by Horton at Fruitville, Mich.
Food poisoning	Jerome, Mich.	June, 1884	24+	—	"	Baker [1]	" " " " " " " "
Food poisoning	Jonesville, Mich.	June, 1884	10	—	"	Baker [1]	" " " " " " " "
Food poisoning	Flint, Mich.	June, 1884	4	—	"	Baker [1]	Cheese believed made at Clio, Mich.
Food poisoning	Big Rapids, Mich.	July 1, 1884	30	—	"	Baker [1]	Cheese made at one of the factories of Horton.
Food poisoning	Carson City, Mich.	July 8–9, 1884	13	—	"	Baker [1]	Cheese made by Horton at Fruitville, Mich.
Food poisoning	Lowell, Mich.	Aug. 28, 1884	13	—	"	Baker [1]	Origin of Cheese not determined.
Food poisoning	Mansfield, Ohio	1893	Many cases	—	Cheese	Reed [84]	Tyrotoxicon. Spoiled milk used for making cheese. Also two sick cows found among those supplying the milk.
Botulism	New York State	Oct., 1914	3	3	Cottage (homemade)	Nevin & Mann [71] Also Nevin [20]	Organisms and their filtrates toxic to mice, guinea pigs and rabbits.
Food poisoning	Kalamazoo, Mich.	June 20, 1916	6	—	Cheddar	Levine [24]	Coliform organism but poison was soluble and thermostable.
Typhoid fever	Bath township, Mich.	1917	51	4	"	Rich [87]	Cheese made at Chesaning, Mich., sold 9 to 30 days after it was made. Believed to be due to a typhoid carrier on farm.
Typhoid fever	4 counties	Feb., Mar., Apr., 1925	29	4	"	Wade & Shore [83]	Infection came from cheese made at Cooperative Creamery. Cheese sold 10 days after making. Typhoid carrier on farm delivering milk to creamery.
Food poisoning	Bedford, Me.	1925	9	0	Albanian cheese	Linden, Turner & Thom [23]	Large numbers of cocci present. Cultured organisms when fed to cats produced diarrhea within 4 hours.
Food poisoning	Kansas City	1926	22	0	Cheddar	Linden, Turner & Thom [23]	Large numbers of cocci present which were morphologically and culturally similar to those isolated from the Albanian cheese.
Food poisoning	U.S.S. Ruben James	1926	20 40	0	Cheese	Thomas & Carll [48]	Cheese part of 1,400 lb. lot procured in New York City. No evidence of Salmonella group.
Food poisoning	Apparently Ontario	1929	130+	0	Probably cheese	Hardman & McKinnon [21]	Outbreak believed to have been due to cheese served at church social. Others who had eaten of same cheese purchased at grocers became ill.
Typhoid fever	St. Maurice Valley, Que.	1932	627	57	Canadian cheese	Foley [34]	Cheese made from unpasteurized milk which was taken from several producers in whose families there were cases of typhoid fever.
	Parkersburg	1934	24	2	Cottage cheese	U.S.P.H. [90]	Cottage cheese made from raw milk.

Typhoid fever	Parkersburg, W. Va.	1934	24	2	Cottage cheese	U.S.P.H.[50]	Cottage cheese made from raw milk.
Food poisoning	Chicago, Ill.	1935	31	0	Wisconsin cheese	Bundenson [6] Also U.S.P.H.[50]	Green producing colonies of streptococci which were slightly hemolytic were reported by the laboratory. Women who had eaten the cheese in the town where it was manufactured also were ill.
Gastroenteritis	Whiting, Ind.	1935	8	0	Cream cheese	McCarthy [25]	"Gastroenteritis was no doubt due to saprophytic organisms rather than dysentery bacilli."
Food poisoning	Idaho	1935	12	0	Cheddar	U.S.P.H.[50]	Cheese made from pasteurized milk.
Typhoid fever	Thorsby, Calgary, Edmonton, Can.	1936	22	4	.....	Bow [3]	
Food poisoning	Mapleton, Minn.	1937	37	0	Cottage	U.S.P.H.[50]	*Staphylococcus albus* isolated. Cheese made from raw and pasteurized milk. Unpasteurized cream also used.
Food poisoning	Sunnyside, Wash.	1937	6	0	Cheddar	U.S.P.H.[50]	*Staphylococcus aureus* isolated.
Diarrhea	Chicago, Ill.	1937	11	0	Imported Romano	U.S.P.H.[50]	
Diarrhea	Chicago, Ill.	1937	24	0	Imported Pecorina	U.S.P.H.[50]	
Typhoid fever	Thorsby, Alberta, Can.	1938	8	0	.....	Bow [3]	
Food poisoning	Meridian, Idaho	1938	17	0	Cheddar	U.S.P.H.[50]	Raw milk used in making cheese. Fecal contamination present. Tyrotoxin suspected.
Botulism	Sheldon, N. Y.	1939	3	0	Homemade cooked cheese	N. Y. State Health News [33]	A case of botulism. Cheese prepared June 5 to 8 and consumed by 3 persons June 9 and 10.
Food poisoning	Michigan	1939	100–200	0	Cheddar	Hardman & McKinnon [21]	225 persons ate cheese from local factory at church supper. Estimated that 500–700 persons ate cheese from same factory and from 100–200 became ill.
Food poisoning	Yankton, S. D.	1939	25+	0	Colby	G. G. Frary [15]	*Staphylococcus aureus*. Cheese made from raw milk.
Typhoid fever	Manitoba	1939 to 1940	8 21 64	11	Cheddar	Bowman [4]	Cheese was not aged.
Food poisoning	San Francisco, Calif.	1939	4	0	"	U.S.P.H.[50]	
Gastroenteritis	Malden, Mass.	1939	10	—	Imported cheese	U.S.P.H.[50]	Staphylococci and Streptococci present.
Food poisoning	Stenislaus (Co.) Calif.	1940	6	0	Cottage home-made Mexican style	U.S.P.H.[50]	Made from raw milk and prepared several days before eating.
Food poisoning	Lena, Ill.	1940	10	0	Cheddar Longhorn	Breed [5] [50]	Intestinal disturbance in employee on cheese.

(Cont.)

TABLE 1 (Cont.)

Disease	*Place*	*Date*	*Cases*	*Deaths*	*Kind of Cheese*	*Reference*	*Remarks*
Food poisoning	Illinois	1941	10	0	Longhorn	Breed [5]	Probably by employee with intestinal disturbance.
Typhoid fever	Oswego, N. Y. (rural area)	1941	23	1	Cheese curds	Schlesinger [42] Also U.S.P.H.[50]	Cheese made from raw milk. Suspected carrier on dairy farm.
Gastroenteritis	Mt. Holly Twp., N. J.	1942	8	0	Cheddar	U.S.P.H.[50]	Grated cheese.
Food poisoning	Baltimore, Md.	1943	6	0	Munster	U.S.P.H.[50]	
Food poisoning	Lexington, Ky.	1943	86	0	Cottage	U.S.P.H.[50]	Pasteurized cottage cheese.
Typhoid fever	Quebec, Can.	1943	40	6	Cheddar	Gauthier & Foley [37]	Young unripened cheese. Typhoid carrier.
Food poisoning	Baltimore, Md.	1943	40	0	Munster	U.S.P.H.[50]	Large numbers of coliform group present.
Food poisoning	Detroit, Mich.	1944	104	0	Cheddar	U.S.P.H.[50]	*Proteus morganii* isolated also H_2S producing *E. coli*.
Food poisoning	Brooklyn, N. Y.	1944	5	0	Roquefort	U.S.P.H.[50]	Onset 45 min. after eating cheese. Two who did not eat it did not become ill.
Gastroenteritis	Roanoke, Va.	1944	71	0	Colby	U.S.P.H.[50]	*Staphylococcus aureus*.
Typhoid fever	California (9 counties)	1944	80	4	Romano Dolce Teleme	Halverson [20] Also [50]	Unripened. Cheese made from raw milk. *E. typhosa*, type C.
Typhoid fever	Sparks, Nev.	1944	3	0	"	U.S.P.H.[50]	Unripened. Cheese made from raw milk. *E. typhosa*, type C.
Typhoid fever	Indiana (16 counties)	1944	246	13	Cheddar	Rice [36]	Unripened, Longhorn, Colby type, poor quality cheddar cheese.
Typhoid fever	Alberta, Can.	1944	83	7	"	Menzies [29] Gershaw [18]	Unripened cheddar cheese, two to four weeks old. Typhoid carrier.
Typhoid fever	Victoriaville, Quebec	1944	29	1	"	C.J.P.H.[27] McCrady [27]	Unripened.
Food poisoning	Boise, Idaho (Garven field)	1944	31	—	Cottage	U.S.P.H.[50]	Cottage cheese suspected. Streptococci other than true lactic type.
Food poisoning	Anderson, Ind.	1945	9	0	Cheese	U.S.P.H.[50]	
Food poisoning	Fulton, Ky.	1945	34	0	Colby Longhorn	Tucker [49] Wright [68]	Made from raw milk and sold without ripening. Made 3-12-45, caused disease 3-26-45 to 4-2-45.
Food poisoning	St. Francisville, Ill.	1945	250	0	Colby Longhorn	Tucker [49] Sievers [45]	Dead mouse found in cheese vat by cheese maker. It was removed and cheese made and sold in Illinois, Kentucky, and Tennessee in less than two weeks.
Food poisoning	Tennessee (6 towns)	1945	250	0	Colby Longhorn	Tucker, *et al.*[49]	*Salmonella typhimurium* isolated from cheese.
Typhoid fever	Cornwall, Ontario	1946	19	—	Cheddar	Thompson [46]	Milk from farm where there was a typhoid carrier. Cheese used before 90 day holding period prescribed by law.

number of cases of disease and for 97.4 per cent of the total number of deaths. There were 4 epidemics listed as causing gastroenteritis, 2 as causing diarrhea, and 2 as causing botulism, with a 50 per cent mortality. In the case of typhoid fever there was approximatley 1 death for every 12 cases of the disease, which would indicate that the typhoid organism remained viable and virulent in cheese sufficiently long to cause severe infection. In contrast to the high mortality for typhoid fever there was not a single death reported in the 1,389 cases of food poisoning due to cheese, indicating that the organisms responsible for this condition either did not produce a potent toxin or else did not remain viable sufficiently long to cause a severe infection or to produce enough toxin to cause death.

The most recent epidemic of typhoid fever traced to cheese was at Cornwall, Ontario, in January and February, 1946. Since this epidemic has not been reported in the literature, the details as reported by Dr. M. G. Thomson, Medical Health Officer[46] at Cornwall, will be given.

Between 26th January and 25th February, 1946, nineteen cases of typhoid fever occurred in the City of Cornwall and the surrounding suburban area which were traced to two cheeses from one cheese factory and the carrier discovered some weeks later. After the fourth case was reported there was presumptive evidence that cheese purchased in two grocery stores was implicated. It was ascertained that one cheese in each store (which had been already sold so that no sample was available for bacteriological testing) was out, contrary to Dominion of Canada Food Regulations, within the ninety day holding period prescribed by those Regulations. These two cheeses were from the same factory and it now became necessary to find the carrier who infected the milk which went into those two cheeses. This was simplified owing to a case of typhoid fever occurring in the area supplying milk to the cheese factory in question. The patient had been on a visit to his mother and she was found to be a carrier of typhoid organisms. Milk from the farm operated by this woman had gone into the manufacture of the two cheeses in question which constituted one batch and these were the only cheeses from this factory which had been released to the retail grocers within the ninety day holding period prescribed by the Dominion Government Food Regulations. I may say that on investigating other milk producers whose milk went into the two cheeses in question, no other carriers were found.

I may say that stool specimens from all the possible food handlers in the grocery stores in question were all negative for *E. typhosa* though these tests were repeatedly done.

The organism in all the cases in this outbreak as well as in the stool specimens from the carrier was *E. typhosa*, Type E.

HOW TO PREVENT DISEASE FROM CHEESE

Two things stand out when a study is made of the various epidemics caused by cheese. One is that the cheese generally has been made from raw milk and that it has been sold and eaten too quickly after it has been made. Likewise, in the experiments testing the longevity of pathogens in cheese the data show that pathogenic bacteria die out more quickly at high than at low temperatures. This leads to the obvious conclusion that all milk and cream used in the manufacture of cheese should be pasteurized and aged at a high temperature. If this were done, the transmission of disease by eating cheese would disappear.

PASTEURIZING AND AGING CHEESE

Pioneer work for using pasteurized milk for cheese making was done in 1912 by Sammis and Bruhn[38] in Wisconsin. The following paragraph from their *Research Bulletin 27* is especially significant in view of the many cases of disease traced to cheese since that time:

This process should interest the farmer because of the increased yield of cheese, and the avoidance of the usual losses in yield and quality due to defective milk. It should interest the cheese maker because the process of making is systematized to such a degree that it is conducted upon a fixed schedule for

TABLE 2

Outbreaks of Disease Traced to Cheese in Other Countries

Disease	*Place*	*Date*	*Cases*	*Deaths*	*Kind of Cheese*	*Reference*	*Remarks*
Food poisoning	Finsbury	Oct., 1901	17	—	Dutch cheese	Newman [22]	Laboratory examination revealed a "poisonous ptomaine."
Food poisoning	.....	Nov., 1908	7	—	Cheese	Evans & Aberd [10]	All cases under 17. Cheese said to be new.
Food poisoning	Dover, England	1922	126	—	Canadian Cheddar	McCauley [20]	Organism closely resembled Gaertner group.
Food poisoning	England	1925	9	0	.....	Savage & White [29]	*Salmonella suipestifer.*
Paratyphoid B	England	1925	23	—	Italian cream cheese	Graham-Stewart [19]	*Salmonella schottmulleri* considered cause.
Food poisoning	Utrecht, Holland	1927	—	—	Cheese	Cleyndert [8]	Milk came from dairy affected with "foot and mouth" disease.
Food poisoning	Coblenz, Germany	1928	53	1	Schicht cheese	Reissland and Steinbach [25]	Gaertner's bacillus isolated from animal carcass. Thirteen persons showed positive Widal for Gaertner bacillus with higher agglutination for typhoid bacillus.
Gastroenteritis	Norway	1928	29	0	.....	Blix and Tisdal [2]	*Bacterium cholerae suis*
Gastroenteritis	Norway	1928	26	0	.....	Blix and Tisdal [2]	*Salmonella aertrycke.*
Gastroenteritis	Norway	1928	65	1	.....	Schytte and Tisdal [43]	*Salmonella aertrycke.*
Food poisoning	Bohemos (Prog.)	1935	7	—	Soft	Schubert & David [43]	A species of *B. coli* implicated.
Food poisoning	Breig prison	1936	100 25 others	0	White cheese	Kathe [22]	Blood of 7 patients agglutinated a hemolytic strain of hemolytic coli in dilutions as high as 1:1,600.
Food poisoning	France	1938	3	—	Pont L'Eveque	Florentin [13]	3 persons in a family of 4 ate the cheese and became ill. The other member who was not ill did not eat the cheese.
Food poisoning	Magdeburg, Germany	1938	28 4 others	—	Limburger	Schade [40]	Strain of *B. coli* isolated from cheese produced poisonous symptoms in mice.
Brucellosis	Eritrea, Italy	1943	Several	0	Cheese	Cilli [7]	Undulant fever traced to cheese containing *Brucella melitensis.* Cheese made from cow's, goat's, and sheep's milk.
Food poisoning	Norwich, England	1944	4	0	Goat's milk cheese (homemade)	MacDonald [20]	*Staphylococcus aureus* isoloted from one patient and from freshly drawn goat's milk.

NOTE: Since these tables were compiled, notice of two more epdemics due to cheese has been received from the U. S. Public Health Service as follows:

Food poisoning	Stinesville & Anderson, Ind.	Oct., 1945	9	0	?		Private homes
Food poisoning	Barrio Miraflores Arecibo, P.R.	Mar., 1945	17	1	Native cheese		Raw milk used

all operations. It should interest the dealer because the cheese is more uniform in quality, and there is less need for cold storage for curing. Finally, the cheese should interest the consumer because it is more uniform in flavor than most cheese to be found on the retail counters, being made from pasteurized milk; and it is a more sanitary product than ordinary American cheese made from raw milk.

One of the reasons why cheese makers have resisted pasteurization is because the technique for making cheese from pasteurized milk is somewhat different from making it from raw milk. Rogers and associates worked for years studying and perfecting cheese making from pasteurized milk. This has developed the precision or "clock" method of making cheese from pasteurized milk which includes (a) use of pasteurized milk, (b) controlled starter cultures, and (c) exact timing of each operation in cheese making. They have demonstrated [9] that, contrary to popular belief, it is possible to make a high quality cheese more uniform in flavor from pasteurized milk. In fact they have shown that by using a good grade of milk and cream, pasteurizing and adding a starter, it is possible to age the cheese at a temperature of 60° F. instead of 40 to 50° F. thereby reducing the aging period from 6 to 8 months to 3 to 4 months. Erekson [11] points out that the higher temperature aging period was used for years but discarded because of certain disadvantages.

There are two safety factors in the pasteurized milk process of making cheese: First, pasteurization which is properly done will kill all asporogenic, pathogenic bacteria which have been responsible for so many epidemics and, second, the aging period at the higher temperature. Even though the ripening is for a shorter period of time, the higher temperature will help to kill any pathogens that may have escaped pasteurization or that have gotten into the cheese after pasteurization. All experiments with cheese artificially or naturally seeded with pathogens show that the pathogens die more quickly at the higher than at the lower temperatures.

STATE AND CITY LAWS ENACTED

California in 1944 was the first state to pass a law requiring that all cheese sold to the retail trade shall be pasteurized or made from pasteurized cream, milk, or skim milk which has been pasteurized, except cheese which has been allowed to ripen or cure for a minimum period of 60 days. Further requirements are made for labeling the variety, grade, factory number, state of origin, and date of manufacture. This law resulted from an outbreak of typhoid fever caused by green cheese in which there were 79 cases in 9 counties in California and 4 in Nevada.

Colorado likewise passed a similar state law which became effective January 1, 1945, which requires that all cheese shall be pasteurized or made from pasteurized cream, milk, or skim milk, except cheese which has been allowed to ripen for a minimum period of 120 days or longer if deemed necessary. In the same year New York amended the State Sanitary Code to require that Cheddar type cheese be pasteurized or that it be made from pasteurized cream, milk, or skim milk, or had been allowed to ripen at a temperature of not less than 35° F. for a period of not less than 60 days from date of manufacture.

Canada, due to the many outbreaks of disease traced to cheese, passed a regulation which became effective August 1, 1945. This regulation among other things requires:

1. Every manufacturer of cheese by the Cheddar or other process from raw or pasteurized milk that yields a hard-pressed cheese shall mark or brand within 24 hours after removal from the press every merchandising unit of such cheese correctly and distinctly with the date of manufacture indicat-

ing the day, month, and year when such cheese was put into press.

2. No person shall cut any Cheddar or other hard-pressed cheese made from raw or pasteurized milk for sale or consumption as such in Canada within a maturing period of 90 days from the date of manufacture. Throughout the first 10 days of said maturing period of 90 days the temperature of storage shall be maintained at not less than 58° F., and throughout the remainder of the period at not less than 45° F.

Illinois amended a former act regulating the sale of dairy products on May 5, 1945, which became effective January 1, 1946. The amended act requires, among other things, that cheese be made only from pasteurized milk and cream or be ripened or cured for at least 60 days at a temperature not lower than 35° F.

Indiana likewise has amended the regulations regarding the manufacture of cheese to the effect that milk and cream used in its manufacture must be pasteurized or that cheese made from raw milk must be held for at least 60 days before it can be used or sold.

New Jersey likewise has recently passed regulations regarding the manufacture and sale of cheese. They require that cheese be made from pasteurized milk or in lieu of this be held for a period of not less than 60 days before it is used or sold.

Alabama has had a law since 1929 which requires cheese made within the state to be made from pasteurized milk or aged for 60 days before it is sold.

New York City is the only city having a sanitary regulation requiring pasteurization of the milk or holding for a 60 day period. The new regulations became effective December 15, 1944, and briefly are as follows:

1. All kinds of Cheddar and Cheddar type processed cheese must be made from milk or milk products which have been pasteurized, or must be subjected to a heat- treatment equivalent to pasterization. In lieu of pasteurization a minimum of 60 days of aging after manufacture of these types of cheese is permitted.

2. All soft cheese will be required to be made of pasteurized milk and milk products.

UNIFORM SANITARY REQUIREMENTS NEEDED

A committee representing the Wisconsin Cheesemakers' Association, Wisconsin Milk Producers' Association, the University and the State Department of Agriculture of Wisconsin, and the National Cheese Institute framed acceptable minimum sanitary requirements* for cheese factories and recommended their official adoption by Wisconsin as well as by other states producing cheese.

As Freidel and Yale[10] point out, the cheese industry itself is deeply concerned with proper public health protection for cheese, and feels that all concerned would benefit if all states would adopt uniform regulations. Since cheese is so widely distributed, this would make compliance with state regulations much easier for the industry.

There is a feeling on the part of some health officials that the easiest and best way to obtain uniform sanitary regulations for the 48 states for the manufacture and sale of cheese would be by federal regulations. The establishment of federal standards for interstate shipments of cheese would serve as a model for state regulations and would necessitate a high degree of compliance on the part of cheese manufactures since cheese is so widely distributed.

GENERAL DISCUSSION

It would appear from the data presented that the public health officials have neglected to place the proper sanitary safeguards around cheese. During the past 50 years or so there have been no less than 59 recorded outbreaks of disease with 2,904 cases and 117 deaths

* These requirements may be obtained from Dr. E. W. Gaumnitz, National Cheese Institute, 110 North Franklin St., Chicago, Ill.

in the United States and Canada. Since 1912 when it was first demonstrated that better cheese could be made from pasteurized milk than from raw milk, there have been at least 50 epidemics with 2,715 cases and 117 deaths. Doubtless most of them could have been averted if the knowledge gained at that time had been put into practice. Only recently, due to several large epidemics, have public health officials begun to act and then only in a very limited way. There are today only seven states and Canada that have laws regulating the manufacture and sale of cheese.

All the laws enacted so far have given an alternation between pasteurizing and holding for a definite period during which it is assumed that if any pathogenic bacteria are present, they will die out. The majority have required a 60 day holding period in lieu of pasteurization. This holding period is too short for the Cheddar type hard cheese since many of the pathogens do not die or their toxins are not inactivated in that time. A 90 day holding period would be preferable; a 120 day holding period much better.

It is interesting to note that it is necessary to heat the milk to a higher temperature in the making of Swiss cheese than in Cheddar cheese. However, the milk still gives a phosphatase test. To date there is no record of an epidemic traced to Swiss cheese. So far it has been impossible to make a Swiss cheese from pasteurized milk.

The discussion so far has pertained to Cheddar cheese. In the case of soft cheeses where an aging period of even 60 days might be detrimental to the quality of the cheese, the requirement should be that they be made only from pasteurized milk or cream with no definite holding period stated.

SUMMARY

There have been reported in the United States and Canada since 1883, 59 epidemics with 2,904 cases of disease and 117 deaths. There is every reason to believe that this represents only a part of the disease caused by cheese.

The organisms most commonly associated with cheese-borne infections are members of the *Salmonella* group such as *Salmonella aertrycke, schottmülleri, typhosus, suipestifer, typhimurium* and *cholerae suis; Staphylococci* such as *Staphylococcus albus* and *aureus*; of the *Brucella* group *Brucella melitensis* but not *abortus*; and *Clostridium botulinum*. There are no reports in the literature of undulant fever due to *Brucella abortus* although cheese doubtless is made from milk containing an abundance of these bacteria. Likewise there are no reports in the literature of septic sore throat or scarlet fever due to streptococci despite the fact that these organisms must be present at times in raw milk made into cheese. *Escherichia coli* is not considered as a cause of cheese poisoning. In Europe several investigators have considered it responsible for the toxin symptoms of illness due to cheese.

Contrary to the opinion of many cheese makers, pasteurized milk makes a consistently higher scoring and better flavored Cheddar cheese than cheese made from raw milk. Cheese made from pasteurized milk can be ripened in about half the time required to ripen cheese made from raw milk, since it can be held at a higher temperature. Experiments made by seeding pathogens into milk and making the milk into cheese show that the pathogens die out more rapidly at the higher temperatures.

There are seven states and Canada that now require cheese to be made from pasteurized milk or cream or to be held in storage for periods ranging from 60 to 120 days in lieu of pasteurization. The 60 day holding period is considered too short a time since pathogens may survive this storage period, especially if the cheese is held at

low temperatures, 40 to 50° F. A 90 day holding period is considered preferable and 120 days still better. All milk used in making soft cheeses should be required to be pasteurized since many soft cheese cannot be held for 60 days without spoilage or deteriorating in quality.

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Cardiolipin and Purified Lecithin as Reagents in Syphilis Serology*

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ATTEMPING a general statement in regard to the value of a scientific achievement at a time when available information is admittedly inadequate is always dangerous. Cardiolipin as an antigenic substance in tests for syphilis has been employed only in a few laboratories and for a relatively short period. The early impressions are favorable, even enthusiastic. The hope is general that the substance will prove to be capable of effecting major changes in the structure of syphilis serology, that will serve to eliminate at least some of the uncertainties which are inherent in the methods presently employed, and that it will promote a greater degree of uniformity in test results.

The purpose of this report is to review briefly the present application of cardiolipin antigens in the serology of syphilis and to mention some of the avenues through which future advances in this phase of laboratory testing may be anticipated. Cardiolipin antigens referred to in this discussion are mixtures of cardiolipin and purified lecithin with cholesterol in varying proportions.

Cardiolipin and purified lecithin were first described as effective serologic antigen components by Pangborn[1] in 1941. Antigens formed of these substances have since been reported as suitable reagents in both complement-fixation and flocculation tests for syphilis. Test procedures in which cardiolipin antigen has been employed include the Kolmer test as reported by Harris and Portnoy,[2] the New York State quantitative complement-fixation test reported by Maltaner and Maltaner,[3] macro- and microflocculation tests by Brown,[4,5] and three microflocculation slide tests by Rein and Bossak,[6] Kline,[7] and Harris, Rosenberg, and Riedel,[8] respectively. Also, a preliminary report has been published recently by Kahn[9] on the use of cardiolipin antigen in the standard Kahn test and in a microflocculation procedure. The opinions and recorded findings contained in these published reports indicate that this reagent can be successfully employed, under routine testing conditions, in either flocculation or complement-fixation technics.

The experience of the writers dates from 1943 at which time the employment of cardiolipin antigens in the Kolmer complement-fixation technic was studied. The antigens were found to possess a minimum capacity to deviate complement in a nonspecific manner in the absence of human sera. This is a desirable characteristic of an antigen selected for complement-fixa-

* Presented before the Laboratory Section of the American Public Health Association at the Seventy-fourth Annual Meeting in Cleveland, Ohio, November 12, 1946.

tion testing. The studies also confirmed the ability of the newer product to replace the conventional lipoidal material without technical modifications in the test method. Spinal fluid testing was not carried out at that time but later experience indicated the usability of the newer antigen in that field.

In subsequent studies the use of cardiolipin antigen in flocculation methods was canvassed. This work led to the development and publication of a slide flocculation method employing a cardiolipin-lecithin ratio which appeared to be optimal for a microflocculation reaction. Continued use of this method has failed to bring to light major technical deficiencies.

The part that cardiolipin and lecithin play as antigenic components is not clearly defined, nor is the exact physiochemical reaction occurring in a positive serologic test known. Neither cardiolipin nor lecithin alone, nor either of these substances in combination with cholesterol, has been found to be a suitable antigen. However, a point of optimum relationship between cardiolipin and lecithin can be determined so that maximum antigenic activity may be elicited under specified testing conditions. An antigen formula found to be most suitable for one test procedure may be unsatisfactory in another. For this reason, the use of a common antigen in all test procedures would not necessarily produce similarity of test results. The part that a stabilized antigen or antigen source can take in the future standardization of serologic procedures appears to be definite but limited.

Certain similarities exist between cardiolipin and the other lipoidal antigens. They have a common source, which is beef heart. Cardiolipin and lecithin, as such, may be the major reactive components of the usual lipoidal antigens. It is also probable that other substances contained in these lipoidal antigens, but discarded during the preparation of cardiolipin and purified lecithin, may be responsible for some nonspecific reactions.

In the serodiagnosis of syphilis there appear to be two general reasons for nonspecificity. The first is the ability of some diseases and upper respiratory infections to produce a reactive substance in the blood stream serologically similar to the reagin that characterizes syphilis. The second, and possibly there is no real distinction, is the presence of substances in the blood serum other than the reagin of syphilis, which have the capacity of reacting with fractions in the antigen other than the syphilis reacting fraction.

The refinement of the cardiolipin antigen components, and the consequent elimination of many adventitious extractives, may well have the effect of eliminating some of the nonspecific reactions. This appears to be borne out by the early impressions derived from limited practical experience. Not any evidence is available up to the present, however, which indicates that cardiolipin antigens render a test procedure immune to the influence of reacting substances produced by malaria, leprosy, mononucleosis, and virus pneumonia. Emphasis is lent to this point by an article recently submitted for publication by Stout.[10]

Sensitivity—The availability of reasonably reproducible antigens such as mixtures of cardiolipin and lecithin forces to the front a general problem which will require clarification before the fullest usefulness of these substances may be obtained. This point concerns the level of reactivity at which a given test method, utilizing cardiolipin antigen, may be adjusted in order best to serve the field of clinical syphilis.

In the past, the individual originator of a test method selected an arbitrary level of reactivity which was considered to be productive of results of greatest usefulness in terms of clinical

syphilis. Antigen preparations for some of the distinctive methods were adjusted to a range of reactivity considered to be optimal. In other methods an antigen preparation which failed to display acceptable reactivity was discarded. With the newer chemical it appears to be possible to establish a relatively precise point of reactivity and to develop cardiolipin-lecithin ratios which will consistently reproduce the desired reacting capacity.

In the event of a uniform level of the above type being found to be feasible and desirable, it would become necessary to establish and to define the level of reactivity which contributes the optimum of sound information. A comprehensive laboratory and clinical study, participated in by leaders in the several professional fields, would appear to be essential to the determination of the level which would be the most informative as regards syphilis.

There are two general considerations which may become important factors in determining the level of reactivity of the test procedure of the future. The first bears upon the use of serology in the post-treatment observation of patients who have received penicillin. The general character of the serology curve, plotted for months or years following treatment, contributes information of real value in evaluating the therapy and in guiding the subsequent management of the patient. The individual test finding is of minimal value except as it contributes to the character of the curve.

Second, a change of equal magnitude is taking place in the interpretation of low reading positive and doubtful reactions in the serum of individuals without history or clinical evidence of syphilis. The previous tendency was to ascribe diagnostic importance to any positive reaction which was confirmed by repeated tests. This significance is being replaced by skepticism arising from the knowledge that many conditions other than syphilis may be responsible for positive findings, and that many of these reactions are spontaneously reversed following the passage of weeks or a few months.

These shifts in values may well argue against the employment of test procedures which are highly sensitive because of the minimum importance of findings in the threshold zone in either the follow-up observation of treated disease or in the establishment of an abstract diagnosis of syphilis.

The maintenance of test reactivity levels on whatever plane may be finally selected as optimum, would necessitate the use of constantly reproducible reagents. For this reason, methods selected for the isolation, purification, and assay of antigen-source-substances, such as cardiolipin and lecithin, could be retained until reagents prepared by other methods were proved to be of superior quality. Investigative endeavors would, in this way, be divorced from efforts attendant to the routine production of serologic antigen.

This action would not inhibit or retard research into the further identification of antigen components, selection of other antigen sources, or the formulation of new or modified testing procedures. Contrarily, these endeavors could be expedited since definite and reproducible performance standards would be available for preliminary comparison.

Further light may be shed on the mechanisms involved in serologic reactions by investigations directed to the identification of the reactive components of serum and clarification of the interdependencies, both physical and chemical, of cardiolipin, lecithin, and cholesterol as antigen fractions. Some progress in this field has been reported by Neurath [11] in a study of the behavior of selected serum fractions with cardiolipin and other lipoidal antigens.

The Pangborn achievement, in making available an antigen composed of more nearly purified substances, at once stimulates speculation as to whether or not the end has been reached in this regard. If the refinement of the fraction of beef heart which is responsible for its antigenic power has reached the cardiolipin stage, there may remain the possibility of carrying the process to a still more simple chemical entity. The inference is fair that the specificity of the reaction produced by the refined product might exceed that of the present compound much in the same manner that the present compound exceeds that of the conventional antigens of lipoidal nature.

Following the same general field of speculation, the development of the structural formula of the product would be helpful as a step in the process of identifying the molecular grouping responsible for the reactivity of the preparation. This in turn would lead to a search elsewhere in nature for similar groupings some of which, conceivably, might be free from the serious handicaps which are inherent in the source of the present product. The ultimate in this general regard would be the reduction of the active principle to a compound capable of reproduction by chemical synthesis. This should have the effect of reducing the antigen factor in blood testing to a precise basis and of abolishing the remaining uncertainties which are associated with the lack of ability to reproduce accurately the antigenic substance in pure chemical form.

The potentialities of cardiolipin appear to offer hope for inprovement of existing conditions in another direction. All who have been interested in either the clinical or public health aspects of syphilis have been impressed with the need for laboratory methods which are capable of avoiding the production of conflicting and discrepant findings. It is realized that many instances of this kind are due to variations in the compositions of antigens, to differences in reactivity levels, and to differences in test mechanics. Discrepancies are, therefore, unavoidable under the present circumstances. The elimination of many instances of the above type could theoretically be accomplished if a simplification of the entire practice of syphilis serology could be effected through the use of cardiolipin antigens.

An initial series of steps in this general direction would seem to be (a) the development of test technics of complement-fixation, tube flocculation and slide flocculation types which would be capable of standardization in all details, (b) the development of cardiolipin-lecithin formulae best suited to the above mentioned test methods, and (c) the manufacture of cardiolipin and lecithin in quantities sufficient to supply all laboratories in which the standard methods were employed. The details connected with the creation of new technical methods would not be insurmountable. An unanswerable question at the moment concerns the ability of cardiolipin in the present state of its development to bear the principal burden of a program of this magnitude. Through the expedient of supplying all antigen material from a central source, together with information as to the formula to be employed in each type of test method, a high degree of uniformity of findings in different laboratories, and in different sections of the country, might be attained.

Present trends are not, however, in this direction. Previously employed test methods are being adapted to individual cardiolipin-lecithin formulae; the level of test reactivity is continuing to be an arbitrary decision on the part of the responsible author, and the number of technical methods, in place of being reduced and standardized, is being in-

creased and further complicated through the necessity of developing an antigen formula for each technical procedure.

The Venereal Disease Research Laboratory early visualized the employment of cardiolipin as a means of promoting greater efficiency in syphilis serology on a national and hemispheric basis. This program would require the authority to manufacture large quantities of the substances and to carry out assays from both chemical and serological standpoints. It would then be essential that the product be dispensed with precise formulae as to optimal combinations of cardiolipin and lecithin to be utilized in defined test procedures, or that completed antigens prepared from these substances be distributed.

Recent information is to the effect that cardiolipin is to be patented and that its future uses will be open to the scrutiny of a non-profit corporation. The effect which this contingency will have upon the application of the substance to the practical problems in syphilis serology which are facing the large laboratories of the country is not clear.

The surrounding of a scientific accomplishment with restrictive legal safeguards must be prompted by a desire to protect the public from unjustified exploitation. What would be construed as justifiable and permissible use of the product in the eyes of the patent holder must await future clarification. It is conceivable that the program outlined may not meet with the approval of the patent holder or the commercial licensee. There is also the possibility that the patent holders may desire to reserve to themselves the function of guiding the product to its fullest usefulness in the service of humanity as a logical corollary of the desire to safeguard the public. Further progress in the employment of the product, in what may be its broadest field of usefulness, may have to await a fuller definition of policy in those regards.

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Importance of a Standard Code for Tabulating Causes of Illness*

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THE *International List of Causes of Death* was adopted more than 50 years ago and has been revised five times, at approximately ten year intervals. Although it has been severely criticised on many occasions, and with respect to particular parts of the classification, its use has continued in many countries over the half-century. In spite of its shortcomings it has had a great part in keeping alive an interest in mortality statistics in many parts of the world which would have abandoned the work without the stimulation of international coöperation and comparison.

Today there is much interest in sickness statistics. Since the beginnings of morbidity statistics for the general population of this country as represented by Sydenstricker's Hagerstown incidence studies,[1] and the prevalence surveys of the Metropolitan Life Insurance Company,[2] it has been realized that deaths, which represent not more than 1 per cent of all illnesses, are a poor index of morbidity. Today many persons are seeking new ways of securing adequate indexes of the health of communities, states, and nations. What more natural than to turn to morbidity statistics.

There are many organizations that need a code for tabulating causes of illness. A few years before World War II there was a great movement to code and index causes of hospitalized illness and many requests came to the Public Health Service for a code, an alphabetical index, and other helps to classify properly the diagnosis of the illness, or in more technical terms, the cause of admission to the hospital. Uniform or not uniform, there is a great demand for a diagnosis code for statistical purposes. If such a list is coupled with the *International List of Causes of Death* and can thereby obtain wide acceptance and use, it will meet an extremely urgent need and will encourage the assembling of morbidity statistics. Through the efforts of the Pan American Sanitary Bureau, the Public Health Service-Census Code[3] has already been translated into Spanish and the index translated and rearranged for the use of Spanish speaking countries in Central and South America. The volume has not yet been published.

The large increase in hospitalization which has occurred in the past 20 years has been another important reason for developing a morbidity code. Hospitals invariably keep records of the causes of admission and with a suitable code and an alphabetical index many of them would set up annual tabulations of the diseases of persons admitted to the hospital, with a separation of surgical, medical, and obstetrical cases. The

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American Hospital Association now has a Committee on Morbidity Statistics whose chief function is to select or prepare a diagnosis code suitable for tabulating hospital statistics on causes of admission.

It is particularly important to tabulate diagnoses for hospital admissions if they are to be understood and interpreted as an index of the health of the community. Without diagnosis it appears that, in contrast to other health indicators, the period of greatest morbidity is the summer. However, an analysis of the situation indicates that so much surgery is elective as to the particular time of the operation that a great deal of it is put off until the more favorable indications of the summer period, and to the times when school children, school teachers, and others with summer vacations can take care of those chronic conditions that are not emergency cases.

In any special study of morbidity, the investigator is always tempted to prepare a diagnosis code that is tailored to the terminology and needs of his specific study. The method is to make a sample tabulation in terms of the diagnosis names actually used in the particular study. Such a code undoubtedly reflects in the truest light the data reported in this one study. However, it means that tabulation on each study is delayed until a code can be prepared, and furthermore that comparison with other studies can be made in only a limited way. A standard code that fits the data reasonably well avoids making a new code for each study and facilitates more extensive comparison. To prepare even a simple code and make an index of medical and diagnostic terms is such a time-consuming job that analysis proceeds slowly if it has to be redone for every study.

A certain degree of uniformity is an advantage in projects of any kind on which two or more groups are working with similar objectives. However, if all aspects of the two or more projects are stereotyped, they become so mechanized that intelligence and judgment are no longer useful because everything is cut to fit the machine regardless of whether the final product gives a true picture of the original data.

Uniformity is an advantage only if the code which is adopted is adequate. The mere adoption of an *International List* for morbidity tabulations would benefit no one if that code were not a workable and useful list with enough detail to set forth the real facts of morbidity but not enough to make the code unwieldy and impossible to use. To secure the adoption of an unsuitable code would only set back by at least 10 years international agreement upon a workable morbidity code.

Given a reasonably good code, uniformity encourages comparison and comparison usually leads to a better understanding of any problem. Comparisons that would be useful are:

1. Sickness rates among trainees and others in the armed forces as compared with civilians of similar age and sex
2. Sickness among industrial employees as compared with the general population of similar age and sex
3. Comparison of sickness and mortality with respect to variation with age, sex, size of city, and geographic section

Uniformity is also useful in comparison with the past, but with changing conditions and ever increasing knowledge of the nature and causes of disease, uniformity with the past must be sacrificed in many instances where the continuation of old classifications would be meaningless in the light of present knowledge. Therefore, any system of disease classification should provide for orderly methods of amendment and extension of the code to meet new conditions.

In past revisions of the *International List* and in any contemplated future ones, the cause of death codes cover the

whole list of diseases. The problem is always to make the code short enough to be a usable statistical instrument and yet contain the detail that will make the categories sufficiently specific to be meaningful. Special studies of a particular disease or disease group would need more detail than could be put into an overall statistical list covering all diseases and injuries. It would not be expected, for example, that a general morbidity or mortality code would be detailed enough for special studies of such diseases as cancer, heart diseases, tuberculosis, and syphilis, or of such matters as maternal and infant health. Research projects and special studies cannot afford to use a uniform code unless it meets their particular needs. All one can hope for is that the classifications used in special studies might be collapsible into the rubrics of a uniform code to assist the investigator in comparing his data with such other morbidity and mortality data as are available.

In this connection a distinction should be made between a list for statistical tabulations and a nomenclature. The purposes of a nomenclature are to assist the attending physician to make the proper diagnosis and to give that morbid condition its standard name as accepted in the best medical circles. In such a nomenclature the thousands of morbid states must each be listed separately but not necessarily with a number attached. A statistical list would show important specific categories arranged in groups of similar diseases with the more indefinite and less important conditions grouped into a limited number of miscellaneous categories.

It would be a mistake to overemphasize the importance of a uniform code. A uniform code in itself does not make comparable statistics—it is only the first step toward obtaining some uniformity in the statistics.

Referring first to the international situation, the *International List of Causes of Death* has been uniform for many years in terms of the categories and subcategories of the list, but an examination of the coding manuals of England and the United States indicates a considerable number of differences in the assignment of diagnostic terms to the several rubrics. Some of these discrepancies represent differences in medical terminology in the two countries, but others can be corrected by close coöperation in the assignment of inclusions under the various categories.

The United States began the allocation of deaths to the residence of the patient only in 1939, whereas in England this has been done for many years. Aside from war years, this step would presumably make little difference in data for the country as a whole, but as soon as tabulations are made separately for urban and rural parts of the country, or by size of city, the allocation for residence makes a very important difference in the rates. With the exception of tuberculosis, for which the hospitals are usually located in the country, the cities, and particularly the smaller cities, draw a disproportionately large number of deaths from the surrounding rural areas because most hospitals are located in towns and cities. In the larger cities the nonresident deaths may not change the rate a great deal, but in the counties surrounding the cities they make a very large percentage change because of the smaller populations in the outlying areas.

The Health Section of the League of Nations (now a part of the World Health Organization) realized early the lack of comparability of statistics on the causes of death in the different countries. Edgar Sydenstricker, who organized the epidemiological work of the League, inaugurated a series of inter-country studies to determine the extent to which death rates from specific causes were

comparable in different countries using the *International List of Causes of Death*.

The discussion thus far has centered mostly upon the question of comparability as between two or more jurisdictions such as counties, cities, and nations. There is, however, an entirely different kind of uniformity, namely, a single code for tabulating causes of illness and of death. It is sometimes maintained that since every death is an illness, a code for causes of death is entirely suitable for tabulating causes of illness. However, the importance of different rubrics in terms of frequency of cases is so entirely different for total illnesses and for fatal illnesses that a diagnosis code to cover both items must provide more categories than are needed for either illness or death considered separately. For example, as causes of illness roughly one-third of all cases are due to minor respiratory diseases, and also roughly one-third of all cases with one or more home calls by a physician are minor respiratory diseases. When the illnesses under consideration are limited to those which confined the patient to bed for one or more days, an even larger proportion is due to minor respiratory diseases. On the other hand, few deaths are charged to the minor respiratory diseases, most of the respiratory deaths being due to pneumonia. Thus when tabulating causes of illness this large group of cases needs to be broken into acute respiratory attacks of various types and sites, but in tabulating deaths from respiratory diseases there is need for only a few categories and practically all of the minor respiratory disorders can be put into one miscellaneous group. However, the fact that cases and deaths are so entirely different in their distribution makes it essential that the same code be used for both fatal and non-fatal illnesses if the true picture is to be clearly portrayed.

In the matter of uniformity of illness and death diagnosis codes, there are also problems which indicate that a single statistical list is only a first step toward obtaining uniformity in coding causes of illness and death. Deaths are usually charged to the first important cause in the train of circumstances which resulted in the death of the patient. Thus a death from an old residual effect of poliomyelitis may reasonably be charged to that disease. On the other hand, in tabulating illness it would not be desirable to confuse the incidence of new cases of poliomyelitis with the accumulated residuals of prior cases; such cases would be better tabulated for illness purposes as impairments of specific types that were caused by poliomyelitis. This is particularly true for persons who had poliomyelitis many years ago but are still afflicted with residual impairments.

There are other definite differences that arise from the type of tabulation that is desired. In tabulating the incidence of the communicable diseases and of most other specific diseases one would usually count every case with its onset in a given period, regardless of whether it occurred alone or in conjunction with some other diagnosis. Thus in the acute communicable diseases, if a child had both whooping cough and measles during the same or an overlapping period of illness, one would want to count and tabulate both causes rather than only one as the primary cause of the illness. Thus to make mortality statistics comparable with those of morbidity, it seems necessary to revise some long-standing methods of tabulation and put more emphasis upon contributory causes of death. Inasmuch as this change has been needed and desired for many years, a uniform code may improve mortality statistics as well as its newer counterpart, the statistics of morbidity.

While it is clear that a uniform diagnosis list will not solve all difficulties,

such a list would make for greater stability in the handling of statistics of the causes of illness and death and would be a very important step in an attempt to obtain comparable statistics.

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Dr. Breed Is Honored for Studies in Dairy and Cheese Field

Robert S. Breed, Ph.D., Professor of Bacteriology at the New York State Agricultural Experiment Station (Cornell University), Geneva, New York, was guest of honor at a recent banquet of the National Cheese Institute in Chicago.

Dr. A. C. Dahlberg, Professor of Dairy Industry at Cornell University, in speaking of Dr. Breed's contribution to bacteriology and dairy science, pointed out that his service in Geneva went back to 1913 when he began with studies on the relationship of the composition of milk to the yield of cheese and studied the value of paraffining and cold curing of cheese. He had a special interest in the bacteriology of cheese curing and particularly on the microbiology of surface-ripened cheese, such as limburger.

Dr. Dahlberg included among the best known contributions of Dr. Breed the direct microscopic method of estimating bacteria in milk, also referred to as the "Breed Method" which is used throughout the world. Dr. Breed has also played a leading role in the development of *Standard Methods for the Examination of Dairy Products* as published by the American Public Health Association. Since 1934 and until recent months he has been Chairman of the committee which prepared these methods. Dr. Breed is also editor of *Bergey's Manual of Determinative Bacteriology,* which is a volume like *Standard Methods for the Examination of Dairy Products,* requiring the cooperation of many scientists specializing in various subjects.

Dr. Breed was presented with a traveling bag because of his travel plan following his approaching retirement, including the Microbiological Congress in Copenhagen this July.

Morbidity Statistics Through Periodic Sample Surveys of Households*

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IT is hardly necessary to dwell for long here upon the need for national statistics on sickness and injury, nor upon the obvious inadequacies of mortality statistics as indices of non-fatal as well as fatal illness. It would be difficult to find a worker in the field of public health, or in any related field, for that matter, who is satisfied that present sources of data, applicable to the country as a whole, are sufficient for his requirements. Moreover, there are *no* statistics of morbidity which can be used to estimate the current rates of illness for the entire United States with a measurable degree of reliability. Previous surveys have been used to make national estimates, but these estimates have, perforce, been accepted on faith. They may be good estimates, but we have no way of knowing.

Surveys of households for morbidity statistics have been carried out in various groups of the population in this country from time to time for the last thirty years. Some were of the type in which a sample of households is visited for interviewing periodically for several years. The largest, the National Health Survey of 1935–1936, was a one-time survey which reached more than 2½ million individuals in 83 cities. The statistical results from these surveys have been widely used, and generalizations have been made from them about broader segments of the population and, in fact, about the entire population. Yet no one of the major surveys was designed according to the criteria of good sampling that are now accepted. Most of the results have also become quite out-of-date, and the question arises as to whether there should not be some new source that could provide current data from which rates of illness in the entire United States could be estimated.

The matter of whether or not an effort should be made to collect at regular intervals statistical information on sickness, the cost and availability of medical care, and related subjects, revolves around such problems as: What sorts of statistics are needed? What possible sources are there that might be exploited and what are the limitations of those sources? Can statistics be collected from any one of those sources with sufficient reliability at a cost that is not prohibitive?

It is proposed to suggest here certain —possibly arbitrary—answers to these questions in order to bring the whole matter into sharper focus and perhaps to stimulate further discussion of the subject.

The answer to the first question is not so arbitrary, and yet it is based upon what one might call well informed hearsay, rather than a comprehensive

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survey of the needs of potential consumers of the statistics. This answer is as follows:

The sorts of statistics that are needed are such as will serve to integrate and calibrate the information from the many existing sources without attempting to go intensively into the special questions of health and medical care that are covered by the existing sources. At present we have numerous scattered fragments of knowledge, ranging from detailed knowledge on certain small parts of the population (such as the Eastern Health District of Baltimore, for example), to moderately detailed knowledge on fairly broad segments of the population (such as the group of workers covered by certain industrial sick benefit associations and group insurance plans) and, finally, to a scanty knowledge on the entire population, which is limited to the incompletely reported incidence of certain communicable diseases. In order to integrate these fragments there are needed certain basic statistics, not necessarily in detail as to cause of illness or geographical distribution, but of such a type that they permit statements to be made about the United States as a whole and about certain broad sub-regions of the United States (let us say, ten).

Suppose that a map maker wishes to map a vast, wild region. He has a large number of maps of small parts of the whole region. These maps were made by various previous map makers at different times in the past. They are of varying accuracy and detail. Some overlap, and where they overlap they often disagree. The map maker sets out to survey the entire region anew. He wants to make the greatest possible use of all previously obtained knowledge of the region, much of which is worth while and at least internally consistent information. He first determines the location of certain prominent landmarks with the greatest possible accuracy. When he feels sure of these landmarks he sinks a bench-mark in the ground at each spot. These bench-marks do not in themselves give a detailed chart of the area. They are simply reference points. The map maker then studies the older detailed surveys. Those that appear to be consistent with the bench-marks he has established are incorporated in a master map. Others are thrown out and resurveyed. New surveys are planned to fill in the empty parts of the map, starting from the bench-marks as reference points.

That analogy gives an oversimplified representation of our problem. In morbidity statistics the bench-marks would be such points of reference as the monthly rates of incidence of certain well recognized groups of diseases by age, race, and sex in each of the geographic sub-regions; the prevalence of the important chronic diseases for the same categories; the amount of time lost from work as a result of illness by persons in the labor force; the number of visits of or visits to a physician, and so forth. In contrast to the surveyor's bench-marks, these points of reference are constantly changing and, furthermore, their measurement is almost always subject to some bias. Nevertheless, it is statistics of the bench-mark type that are required in order to construct a current quantitative picture of sickness and injury in the United States. Such statistics would not replace or remove the need for the intensive studies in particular areas and the detailed periodic reports on special groups of the population. It would, however, serve to calibrate the information from existing sources. Hence, the term "calibration statistics" might be a reasonably good term to use in describing the type of data we should attempt to get.

What are the possible sources of information of this sort? The possibilities are by no means numerous, if one at-

tempts to list only the basically different ones. One could, for example, attempt to insert two or three questions in the schedule of the decennial census. But that idea has few benefits and many disadvantages. Chief among the latter are the obstacles encountered in adding questions to that already crowded form, the difficulty in giving census enumerators the proper training for the tricky definitions that are involved in morbidity surveys, and, most important of all, the ten year interval between censuses which, even for "calibration statistics," permits far too little detail to be obtained on the seasonal and secular changes in the level of morbidity and far too little opportunity to correct the biases discovered in the results.

Serious consideration was given some years ago to the possibility of collecting morbidity statistics through a registration system dependent upon the coöperation of physicians. Fortunately, the idea seems now to have been abandoned. For not only would the placing of such a burden of paper work on the physicians solely for statistical purposes have encountered vigorous and justified opposition, but the results with the best of coöperation, would have given a seriously incomplete picture. It is an accepted fact that a large part of the illness causing loss of time from work and confinement to bed is not treated by physicians.

Similar objection can be made on the basis of incompleteness, and probably also on the basis of the paper work load it would entail, to a system which called for central reporting of all hospital cases.

Despite the incompleteness of statistics collected from physicians and hospitals, this source of information might offer valuable supporting data to other surveys, and the possibility of collecting facts on the illness of their patients from samples of physicians or hospitals is one that should be studied. But in order to include as much as possible of that illness not treated by physicians, some other source must be utilized, and that source is obviously the individual who is taken ill, or at least some member of his immediate household.

The most important of the large-scale morbidity surveys undertaken here in the United States have been of this kind. The limitations of these previous household surveys are of two general types. The first and most serious is the limitation which actually applies to any type of morbidity survey. It probably accounts for the fact that there has not been set up, to date, any index of illness in the general population. This limitation results from the elusive character of the concept of illness. It is extremely hard to set up an objective, useful definition of illness in its broadest sense. Even disabling illness, which can be defined in terms of inability to go to work, or go to school, or perform usual household duties, is not easily pinned down in the case of housewives, preschool children, infants, elderly persons no longer working, and persons with jobs who happen to be on vacation. Furthermore, social "tabus" still exist around the discussion of venereal diseases, mental diseases, cancer, and physical deformities. To add to this, there is the basic difficulty that a person may call himself ill when he is in a particular state of health, while another person in the same state of health might consider himself to be "in the pink." Can one even speak about a particular state of health disassociated from the personality in whom it exists Many people refuse to think of themselves as ill even when the signs and symptoms of disease are obvious; others consider themselves as invalids merely to escape unwanted responsibilities or to gain sympathy and attention. Finally, it has been demonstrated that a person's memory of minor, yet incapacitating, illnesses is often limited to a month or

less, and it has also been demonstrated that interviewers vary considerably in their ability to bring out the fact of illness in the households visited.

Yet, despite these seemingly overwhelming difficulties, household surveys for morbidity have been considered a useful source of quantitative information. The National Health Survey of 1935–1936 might seem to have been pumped dry by the dozens of valuable scientific papers based upon its results, but the end is not yet in sight. This is partly a function of the tremendous demand for this type of statistics, but it also reflects the fact that the persons working with the material feel that they know enough about the lack of objectiveness in the definitions and the biases present so that they can make allowances for them when necessary. How much more they would have known, if only the survey could have been designed to be repeated at intervals!

Before citing an example of the manner in which a household survey of this type is currently demonstrating its value in Great Britain, it is necessary to discuss the second general type of limitation in the large-scale sample studies previously undertaken in this country. This limitation arises from the fact, already mentioned above, that the projects were designed without sufficient consideration for the basic requirements of a good sample design as now recognized.

For a moment, let us review these requirements. First, the design must be such that it gives the maximum reliability per dollar expended. That means that, if you have a certain amount of money that can be spent, your design must minimize the errors of estimate subject to that condition, or, if you start with the condition that the errors of estimate must lie within certain limits 99 out of 100 times, then your design must be such as to minimize the cost of the sampling operation. Second—and the second requirement follows directly from the first—you must use a method of sampling which permits the measurement of the precision of the estimates. This rules out all purposive methods where personal judgment enters directly into the selection of the units sampled. And, third, the design of the sample must be one that can actually be carried out in practice. Sampling theory and sampling practice must be compatible.

Many people suppose that by simply increasing the size of the sample, so that a considerable part of the population to be studied is included, a good sample is thereby assured. Unfortunately that is not true, and, worse than that, it is definitely uneconomical. In the National Health Survey statistics were obtained on 2,502,391 individuals, or 3.6 per cent of the urban population of the United States in the previous census. This is really a very sizable proportion. But for various, perhaps unavoidable, reasons the cities were chosen purposively, and consequently it is difficult to know how good an estimate of morbidity in the urban population of the United States is provided by the results. Or, stated in another way, the overall rates from the sample give an estimate for the cities surveyed, but we have no way of knowing how valuable the generalizations from the 3.6 per cent are for the other 96.4 per cent.

This general type of limitation of previous large-scale household surveys is avoidable. Surveys planned for the future need not have that drawback. As far as sampling is concerned there is no reason why we should not have "calibration statistics" in morbidity, statistics from which generalizations can be made for the United States, for broad sub-regions of the country, and even for states and large cities if we want to pay enough; and, attached to these generalizations, we can have statements con-

cerning the sampling precision of the estimates.

In Great Britain, periodic surveys of illness among persons over 16 years of age are being made by a government social survey organization on behalf of the ministry of health. They were initiated in October, 1943, and with a few interruptions have provided statistics for every month since that time. Although the Health Index, as it is called, was originally set up to meet the emergency needs of a country in the depths of total war, it was found to be so useful that it was not abandoned at the end of the war. So far as can be ascertained, it is a permanent fixture.

That the British program has proved to be well worth the money spent for it, there is little doubt. New relationships between morbidity and social factors are being discovered for the English population. Some of these are relationships about which we already know quite a good deal for certain communities in the United States, but the Health Index provides statistics from which statements about the population as a whole can be made and which can be used as a basis for action in the medical program of the country.. Moreover, the results of each month's investigation are available reasonably promptly, a fact which suggests an advantage that the small-scale repetitive survey has over the larger one-time study. The latter involves such massive tabulations that results are often delayed to the point of seriously diminished usefulness. Perhaps most important of all from the statistician's point of view, the Health Index provides in its original design for its own improvement in that it is repeated. It would be hard to overemphasize the value of that repetition. It means that one can gain a knowledge of where the biases are, where the definitions are weak, and even of how they can be made more objective. In view of the fact that it is limitations of this sort which are crucial in determining whether a household survey plan is, or is not worth while, we are led to the somewhat paradoxical conclusion that the best way to decide in this country whether sample surveys of households can yield reliable "calibration statistics" on morbidity is to set up the project the best we know how, let it run for several years, and then have no hesitation about abandoning it, if it gives inconsistent or unreasonable results.

Of course, a series of methodological pilot studies is a prerequisite to any such project. Such studies might indicate at the outset that the idea was not feasible. But if they did not, there would still have to be a probationary period of several years during which the estimates would be checked in every way possible, and every effort would be made to discover the idiosyncrasies of the index and to improve it.

This leads us to the consideration of the third question proposed at the beginning of this paper: Can statistics be collected with sufficient reliability and at a cost that is not prohibitive?

Although it is not the function of the statistician to decide whether a cost is prohibitive or not, the belief of the author of this paper that the cost need not be a major deterring factor is based upon two trends which the statistician does have an opportunity to observe. One is the trend of increasing need for current morbidity statistics to serve the purposes of action programs of an actuarial type. Medical care plans are being set up in several different parts of the country, and there is much debate on the matter of whether the federal government should operate a plan on a national scale. Planning of such programs creates a new demand for basic morbidity statistics, and, as the demand increases, the value of the product in terms of what people are willing to pay for it goes up, as we have had ample opportunity to see in recent months.

The second trend is in the direction of a better product for a given price.

During the war there was rapid improvement in the techniques of sample survey design. In fact, so rapid has the progress been that many of the new theoretical and operating principles have not yet been described in print. These contributions have been of the utmost practicality: How to divide up a sample between different strata in order to get the lowest variance per dollar expended. Whether a method involving a small bias and a small variance may perhaps be better than one with no bias but a larger variance, other things being equal. How to construct a sample in such a way that it will make for administrative efficiency in the field. How to select and train interviewers. How to design interviews for information on subjective matters. How to combine a mail questionnaire survey with a personal interview survey in order to preserve the best features of both. And so forth.

The recent advances in sample survey design have a very direct bearing on the problem of collecting morbidity statistics by means of household interviews, for as a result of them substantial gains can be made in the precision of the estimates per dollar expended.

But it must constantly be borne in mind that the total error of the estimate results from bias as well as from errors of sampling. If we were content to ask such simple, objective questions as "Have you visited a doctor or had a doctor visit you in the past month?" bias would be unimportant, and there would be no question that the cost of obtaining current national and even regional estimates would not hinder us from setting out immediately to collect the statistics. But the demand for "calibration statistics" to serve the needs of public health activities and programs directed at medical care will not be satisfied so easily. These consumers require at least to know the total amount of illness of various degrees of severity in each important segment of the population. The fact of illness, as we have already said, depends upon who asks the question, how the question is phrased, at what stage of ill health the interviewed person considers himself ill, how good his memory is, and so forth. Hence, beyond a certain limit, no amount of additional money put into increasing the size and representativeness of the sample will yield any increase in the reliability of the results.

CONCLUSION

In conclusion, then, the answer to the third question which was posed at the beginning of this paper must remain indeterminate until such time as methodological pilot studies and a full-scale trial for a period of at least a year can be undertaken. The objective should be "calibration statistics" of the type described. The method should be sample surveys of households. The pilot studies should seek the answers to such questions as: What definitions are to be used? What type of interview will best bring out the information? What type of interviewer should be employed? Over how long a period of time is the informant's memory to be relied on? The trial period should be a full-dress rehearsal with a limited audience—that is, with restricted publication of the statistical results—continuing until all the peculiar characteristics of the material are understood and all the known faults eliminated. At the end of the trial period, an independent committee of experts might be called upon to determine whether the periodic surveys should be continued.

Experience with Vaccination Against Influenza in the Spring of 1947

A Preliminary Report *

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ON the basis of accumulated experience an outbreak of influenza A was anticipated in the winter of 1946–1947. In an effort to gain further information concerning the efficacy of influenza virus vaccine in the prevention of the disease a study was undertaken at the University of Michigan. The vaccine, with expiration date of February, 1947, was received from Army stores through the Service of Preventive Medicine, Office of the Surgeon General. The material had been prepared in the same manner as that utilized in previous studies [1–5] which had demonstrated a prophylactic effect. Its red cell agglutinating titer was 5,120 by a pattern test,[6] the same as that of the standard National Institute of Health control vaccine titrated simultaneously. Immunization of mice demonstrated that its antigenic potency was ten times greater than that required by the National Institute of Health.

VACCINATION PROGRAM

Through the staff of the Student Health Service, under the acting Directorship of Dr. Margaret Bell, vaccination was offered to the student body on a voluntary basis. The bulk of the vaccination program was carried out between October 22 and November 2, 1946, and an individual record was prepared for each student. Ten thousand, three hundred and twenty-eight students received vaccine and 7,615 did not. A small number of individuals with marked sensitivity to eggs were excluded. No anaphylactic or other allergic reactions were observed and, according to the records of the Health Service, the number of individuals with systemic complaints was less than 1 per cent.

In case of illness practically all students reported to the Student Health Service where they were seen by physicians who had participated in the studies of previous years and were, therefore, well acquainted with the general diagnostic procedures. A record was kept of all individuals reporting with respiratory infections. Cases suspected to be influenza were studied in relation to etiology.

Early in March, 1947, an increased amount of respiratory disease was observed. At the same time there was an increased incidence of illness with nausea, vomiting, and diarrhea in certain groups. However, the other illnesses appeared to be more characteristic of mild influenza. Only patients with significant fever were admitted to the

* This investigation was conducted under the auspices of the Commission on Influenza, Army Epidemiological Board, Office of the Surgeon General, United States Army, Washington, D. C.

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TABLE 1

University of Michigan 1946–1947 Vaccination Study
Geometric Mean Antibody Titers before and Two Weeks after Vaccination

		Virus Strains					
		PR8-A		Weiss-A		Lee-B	
	Subjects	Pre	Post	Pre	Post	Pre	Post
Not Vacc. Prev.	68	38	400	35	271	86	512
Vacc. 1 yr. Prev.*	28	238	420	178	330	297	458
Total Group	96	63	410	59	289	120	497

* Army veterans vaccinated between October, 1945, and January, 1946

infirmary where further details of history, throat washings, and blood specimens were obtained. As the outbreak increased in scope some of the febrile illnesses were handled as outpatients and others were visited in their residences. From March 3 to April 4 when spring vacation began, 1,359 cases of illness were recorded, an incidence of 7.6 per cent for the period of the outbreak.

During the same period 183 patients were admitted to the infirmary, and from 94 of these materials for virus studies were obtained.

ANTIBODY RESPONSE TO VACCINATION

Sera were obtained from 96 individuals before vaccination and 10 days or more after vaccination (Table 1). Sixty-eight of them had not been previously vaccinated and showed excellent responses. Twenty-eight of the group were individuals with clear records of vaccination in the Army approximately one year prior to the present inoculation. It is of interest to observe that their titers before vaccination were still quite high after the interval of one year and that their final level of antibody titer after vaccination did not go beyond that of individuals being vaccinated for the first time. The data indicated, then, that the vaccine had effectively stimulated production of antibody to the strains of virus in the vaccine.

VIRUS STUDIES

Great difficulty was encountered in isolating virus from the throat washings of the patients. Intensive efforts were made to isolate virus in embryonated eggs from the throat washings of 28 patients. Thirteen specimens were investigated by repeated allantoic passages with only negative results. Eight specimens were examined by amniotic inoculation of 10–11 day embryos; all were negative. Ten specimens were inoculated into the amniotic sac of 13–15 day embryos. Six apparently positive results were obtained under these latter conditions. They have not been adapted to allantoic passage, however, and red cell agglutination was demonstrated only with human and guinea pig erythrocytes but not with those of chickens.

Three specimens of throat washings induced characteristic responses in ferrets and were passed in series in that animal. Thence, these strains were adapted to mice and from mice to eggs by the allantoic route. Three additional specimens stimulated antibodies in ferrets. Two were entirely negative. Adaptation of virus to mice after ferret passage was slow and three to five serial passages in the latter species were required before pulmonary lesions were clearly observed. The difficulty in establishing virus in eggs is quite different from our previous experience with influenza A.

Serological evidence indicates that the virus is a strain of influenza virus, Type A. The majority of patients recovering from the illness showed increased antibody titers to the PR8 strain and to a newly isolated strain

TABLE 2

Comparison of Mean Antibody Titers in Acute and Convalescent Phase Sera of Hospitalized Patients

			Virus Strains			
			PR8		Rhodes	
Group	Number	Serum	Titer	Difference	Titer	Difference
Unvacc.	39	Acute	76		27	
		Conv.	230	3.0X	120	4.4X
Vacc.	55	Acute	499		32	
		Conv.	809	1.6X	115	3.6X

TABLE 3

Comparison of Individual Responses to PR8 and 1947 Strain of Influenza Virus, Type A

	PR8		Rhodes—1947	
1947 Illness	*Acute*	*Conv.*	*Acute*	*Conv.*
Ben	64	128	32	256
Scone	64	512	<32	64
Tier	256	2,048+	32	1,024
1946 Vaccinated	*Pre*	*Post*	*Pre*	*Post*
Senc	<32	8,192	<32	64
Yager	32	2,048	<32	<32
Dioz	<32	8,192	<32	<32
Dens	32	8,192	<32	2,048+
1943 Illness	*Acute*	*Conv.*	*Acute*	*Conv.*
Cope	<32	4,096	<32	<32
Chap	32	1,024	<32	<32
Foul	64	1,024+	<32	128

(Rhodes). The mean acute and convalescent titers in unvaccinated individuals were 76 and 230, respectively, for PR8; 27 and 120, respectively, for Rhodes (Table 2). It is of interest to point out that the mean titers in the acute stage of illness were 76 in the unvaccinated and 499 in the vaccinated when tested against PR8. This latter figure is essentially the same as that of the group tested 2 weeks after vaccination, indicating that there had been no sharp loss of antibody level in the interval since vaccination. In sharp contrast, however, there was no significant difference in the low titers of vaccinated and unvaccinated individuals in the acute stage of illness when tested with the new strain. It was of further interest that when comparing the titers of sera from individuals before and after vaccination in 1946, the majority showed a good rise to PR8 and Weiss strains which were included in the vaccine but little increase in antibody to the new strain (Table 3). Further tests with acute and convalescent sera from patients suffering from influenza A in 1943 showed a sharp increase in titer to the PR8 strain with little or slight antibody production to the current new strain. These results clearly indicate that the strain prevalent in this outbreak has a sharp antigenic difference from those commonly encountered in previous years and from those incorporated in the vaccine.

INCIDENCE OF ILLNESS IN VACCINATED AND UNVACCINATED INDIVIDUALS

The amount of respiratory disease that occurred in vaccinated and unvaccinated persons during the period of the outbreak is shown in Table 4. That the major proportion of cases was due to the influenza virus was indicated by positive serological evidence of infection in approximately 80 per cent of the

TABLE 4

Comparison of Incidence of Respiratory Disease in Vaccinated and Unvaccinated Individuals

	Vaccinated (10,328)		*Unvaccinated* (7,615)	
	No. of Cases *	*Incidence Per cent* †	*No. of Cases* *	*Incidence Per cent* †
Inpatients	88	0.85	85	1.12
Outpatients	616	5.96	489	6.42
Room Calls	39	0.38	42	0.55
Total	743	7.19	616	8.09

* Number of cases in interval March 3–April 4, 1947.

† Based on the assumption that the populations under study remained unchanged in the interval between vaccination and the outbreak. Actually a slight but comparable reduction occurred in both vaccinated and unvaccinated groups.

94 hospitalized patients. It is clearly evident from the data that the incidence of disease was no different in vaccinated and unvaccinated individuals.

INTERPRETATION

In view of the laboratory studies indicating that the antibody titer for the new strain was essentially the same in vaccinated and unvaccinated persons, it is not surprising that the amount of illness was practically the same. Since the antibody titers to the strains of virus in the vaccine were high in the vaccinated individuals who became ill, it seems unlikely that the ineffectiveness of the vaccine in the prevention of influenza in this instance was related to the interval of time between vaccination and the appearance of the outbreak.

All the data point to the probability that the antigenic deviation of the virus encountered is the responsible factor. This is further supported by the evidence obtained with ferret sera. The sera of ferrets inoculated with the new strains ordinarily developed high titers to recent (1947) strains isolated here and also to some furnished by Dr. J. E. Smadel of the Army Medical School, but had decidedly less response to the PR8 and Weiss strains of Type A. Convalescent sera from ferrets inoculated with these two latter strains also exhibited high titers to them with little or low titers to the new strains. Moreover, some presumably normal ferret sera were found to neutralize the new strains in eggs and mice; the interpretation of this has not been fully established.

Thus, the absence of effect of vaccination during the outbreak of influenza in the spring of 1947 appears to be due to the lack of sufficient antigenic crossing between the strains of virus in the vaccine and the prevalent strain responsible for the epidemic. The implications of this and other observations will be discussed in a more detailed report to be published.

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Proposed Statistical Classification of Diseases, Injuries, and Causes of Death*

Prepared by the United States Subcommittee

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THE Fifth International Conference for the Revision of the *International List of Causes of Death*, like the preceding conferences, was convened by the Government of France. It was held at Paris in October, 1938. Apart from bringing the previously existing lists up to date in accordance with the progress of science, particularly in the chapter on infective and parasitic diseases, changes in the chapters on puerperal conditions and on accidents and the addition of a list of the causes of stillbirth, the Conference made few changes in the content, number, and even numbering of the items.

The Conference recognized the growing necessity for a corresponding classification of diseases for morbidity statistics to meet the needs of widely differing organizations, such as health insurance groups, hospitals, the military services, and health administrations, and recommended continued studies in this direction.

The Conference further recommended that the United States Government continue its studies of the statistical treatment of joint causes of death.

In compliance with this recommendation, in 1945 the Secretary of State of the United States appointed the present United States Committee on Joint Causes of Death and requested the Governments of Canada and Great Britain to designate official representatives as members or advisers. Dr. Y. Biraud, Head of the Epidemiological Intelligence Service, Health Section of the League of Nations, also accepted membership on the committee. Two meetings of the full committee have been held in Washington, and a third meeting is scheduled for early next year.

The committee has recognized that its charge to continue the studies of joint cause classification was inseparable from the question of the basic structure of a revised list that could serve as a code for the classification both of causes of death and of morbidity. A special working subcommittee (see page 1071) was appointed, to the members of which belongs the principal credit for the painstaking study and suggestions that are largely responsible for this proposed

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† This report is presented by Dr. Rogers in the capacity of Chairman of the Subcommittee on the Sixth Revision of the International List of Causes of Death of the Committee on Research and Standards of the American Public Health Association.

classification of diseases, injuries, and causes of death which can be used for both morbidity and mortality statistics.* This proposed classification has been adopted by the U. S. Committee for further study and possible presentation to the International Conference for its consideration when it meets in 1948.

The classification consists of three parts: Part I is a list of disease categories for the tabulation of morbidity and mortality statistics. It is not suitable for actual coding, since it does not contain either a tabular list of inclusion terms, or an alphabetical index. Part II contains the tabular list of inclusion terms for each disease category. It makes preliminary trials of the code possible. Part III, containing an alphabetical index of diagnostic terms which may appear in medical records and reports, will not be completed until the list is in a definitive form and may not be available until late in 1947 or early 1948.

PRINCIPLES UNDERLYING THE PROPOSED CLASSIFICATION

In considering the general principles underlying the proposed morbidity and mortality list, the aim has been to produce a classification for statistical purposes and not a nomenclature of diseases and injuries.

A classification of diseases and injuries designed for both morbidity and mortality statistics must necessarily include more categories than a mortality classification alone. The experience of the committee of the Medical Research Council and that of the U. S. Public Health Service and the U. S. Bureau of the Census in the development of statistical classifications has shown clearly, however, that the general structure of the *International List* was a useful frame around which a morbidity classification could be evolved. Likewise, the *Standard Morbidity Code* of the Dominion Council of Health of Canada has indicated that the general structure of the *International List* can be followed for morbidity classification. The basic framework of the *International List*, furthermore, has withstood the test of well over a half-century of use in countries throughout the world. The very fact that the general arrangement has not been changed substantially in that time suggests that it would be difficult to improve upon it as a working basis for disease statistics.

Accordingly, the main subdivisions of the proposed classification are, for the most part, the same as the main chapters of the *International List*. Despite this effort at uniformity, a comparison between the frequency of a disease as a cause of death now and twenty years ago is likely to be difficult of interpretation, through no fault of the code, however. Such a comparison would be greatly influenced by the variations in the use of a particular term to describe a disease by observers differing in their education and medical outlook.

NATURE OF PROPOSED CLASSIFICATION

The philosophy underlying the proposed classification has of necessity been somewhat eclectic since no single basis or axis of classification is practicable. The proposed classification deals, in sequence, with diseases by cause, with respect to the well defined infective agents, then with neoplasms, general diseases on a somewhat physiologic basis, a long series of diseases according to their principal anatomic site of occurrence, and, finally, with injuries.

An important new form of grouping in certain conditions has been adopted to characterize the late effects or residual

* Parts I and II, prepared by the Subcommittee on Classification of Diseases, Injuries, and Causes of Death of the U. S. Committee on the Joint Causes of Death, were published in April, 1946, and August, 1946, respectively, and are available in limited number through the Federal Security Agency, U. S. Public Health Service, Washington, D. C.

FIGURE 1

08 *Diseases attributable to filtrable virus* (Part i)
- 080 Acute poliomyelitis
  - 080.0 Specified as bulbar (including polioencephalitis)
  - 080.1 With mention of other paralysis
  - 080.2 Specified as nonparalytic
  - 080.3 Unspecified
- 081 Late effects of acute poliomyelitis
  Specified as a late effect or sequela, or present one year or more after onset

disorders of function which may remain but which are quite distinct from the original disease or injury. Examples in which this method has been adopted are the late effects of poliomyelitis, of rickets, and of injuries (Figure 1).

The proposed classification consists primarily of a reasonably short list of 99 groups and a more detailed list of 742 or 784 categories depending on whether injuries are classified according to the external cause of the injury or to its nature. A decimal system of numbering has been adopted in which the detailed categories are designated by a 3-digit number. The first and second digits of the 3-digit number designate important or summary groups, and the third digit subdivides these into more definite categories that frequently represent specific diseases.

The decimal system represents a departure from the combined number and letter subdivisions that have been used heretofore in the *International List of Causes of Death*. Although the number of definite categories in the proposed classification is substantially larger than in the present *International List*, it is expected that any resultant disadvantage will be more than offset by the greater flexibility and utility of the numbering system suggested.

The proposed classification provides an abridged list of 99 significant groupings which should prove much better adapted to statistical purposes than either of the abridged lists of the current *International List*. One important advantage of the proposed list lies in the fact that the code for the abridged list constitutes the basic structure for the code for the long list of approximately 750 inclusions as well. This is not the case in the current *International List*, so that either separate punching or code correlation of some sort is required whenever comparison between the long list and an abridgement is made.

Not every condition has received a particular rubric or number, but there is a place or number to which every condition can be referred. This has been achieved by the method of selective grouping. For example, a broad group of conditions such as the psychoses is given a 2-digit number and is then divided into eight categories corresponding to fairly well defined types of psychoses, and, lastly, there is a ninth or residual category to which the psychoses which are not already covered or which are ill-defined can be allocated (Figure 2).

The determination of what conditions should be specified as definite categories has been based on their frequency, importance, and clarity of characterization. The question as to how satisfactory these subdivisions are will be tested under the principle that the number of conditions allocated to residual or ill-defined categories must not be unduly large. Fortunately the proposed classification permits the introduction of new categories without upsetting the basic numbering of other categories. The clerical and mechanical economy of such

FIGURE 2

V. MENTAL DISEASES, PSYCHONEUROSES, AND PERSONALITY DISORDERS

31 *Psychoses*

Numbers 310–318 exclude general paralysis of insane (025) and puerperal psychosis (648)

310 Dementia praecox (schizophrenia)
311 Manic-depressive psychosis
312 Involutional psychosis
313 Paranoia and paranoid conditions
314 Senile psychosis
315 Psychosis with cerebral arteriosclerosis
316 Alcoholic psychosis
317 Toxic or infective psychosis

This title is not to be used for primary death classification if the antecedent condition is known. It is not to be used for primary morbidity classification if the antecedent condition is present.

318 Other and unspecified psychoses

a possibility is of particular importance to statistical organizations which handle large volumes of records.

The numbering system has been designed purposely as a closed system; that is, the third digit categories under each 2-digit group begin with "0" and continue consecutively for the number of categories in that group. No vacant numbers are left except at the end of the 3-digit subdivisions. Thus the detailed classification represented by the code must remain uniform to the third digit.

Many of the 3-digit categories are further divided into more detailed subcategories, often on a different axis of classification (Figure 3). The numbers for these sub-categories represent decimal subdivisions of the 3-digit code. These sub-categories may be considered optional. Whenever more detailed terminology than that provided in the classification is required, the fourth digit place should be used. If such fourth digit sub-classes are created it is recommended by the committee that letters instead of numbers be used. This will serve to distinguish such particularized inclusions from the items that comprise the standard list in international use.

COMPARISON WITH CURRENT INTERNATIONAL LIST

In the proposed scheme, there are 17 main sections as compared with 18 in the *International List*. There are 99 2-digit groups in the proposed list and approximately 750 3 digit categories. These may be compared with the abridged *International Lists* of 44 or 87 titles and with 200 categories and approximately 450 sub-groups of the complete *International List*.

FIGURE 3

07 *Spirochetal diseases, except syphilis*

070 Vincent's infection
071 Relapsing fever
071.0 Louse-borne
071.1 Tick-borne
071.2 Unspecified
072 *Leptospirosis icterohaemorrhagica* (Weil's disease)
073 Yaws
074 Other spirochetal infections, except syphilis

FIGURE 4

Comparison of Main Sections, International List of Causes of Death (5th Revision) and Proposed Statistical Classification of Diseases, Injuries and Causes of Death

Section	*International List*	*Proposed Statistical Classification*
I	Infectious and Parasitic Diseases	Infective and Parasitic Diseases
II	Cancer and Other Tumors	Neoplasms
III	Rheumatism, Diseases of Nutrition and of the Endocrine Glands, Other General Diseases, and Avitaminoses	Allergic, Endocrine, Metabolic, Nutritional and Other General Diseases
IV	Diseases of the Blood and Blood-forming Organs	Same
V	Chronic Poisoning and Intoxication	Mental Diseases, Psychoneuroses, and Personality Disorders
VI	Diseases of the Nervous System and Sense Organs	Same
VII	Diseases of the Circulatory System	Same
VIII	Diseases of the Respiratory System	Same
IX	Diseases of the Digestive System	Same
X	Diseases of the Genito-urinary System	Same
XI	Diseases of Pregnancy, Childbirth, and the Puerperium	Deliveries and Complications of Pregnancy, Childbirth and the Puerperium
XII	Diseases of the Skin and Cellular Tissue	Same
XIII	Diseases of the Bones and Organs of Movement	Same
XIV	Congenital Malformations	Same
XV	Diseases Peculiar to the First Year of Life	Diseases Peculiar to the First Month of Life
XVI	Senility	Senility and Ill-defined Conditions
XVII	Violent or Accidental Deaths	Accidents and Violence
		N = Classification by Nature of Injury or Poisoning
		E = Classification by External Cause

Although for the purpose of maintaining continuity of mortality statistics the important titles of the current *International List* have been retained, it did not seem essential that there should be strict comparability for each subdivision. However, in so far as is practicable the order of the diseases follows that of the *International List* with the addition of diseases, usually items concerned with morbidity rather than mortality, that were not given a specific place before.

Comparison of the main section headings of the two lists shows the following proposed changes:

Section V, "Chronic Poisoning and Intoxication," of the *International List* has been eliminated and the conditions included in the three groups of that section are assigned elsewhere in the proposed list, principally under the revised section on "Accidents and Violence." In the place of the former Section V, a new section on "Mental Diseases, Psychoses, and Personality Disorders," has been established.

The heading of Section XI has been reworded to include normal pregnancy and delivery.

Section XVI, "Senility," and Section XVIII, "Ill-defined and Unknown Causes," have been combined in a single section, also Section XVI, under

the heading of "Senility and Ill-defined Conditions." Section XVIII has not been continued.

For Section XVII, "Accidents and Violence," the committee has adopted a dual system of classification. This section has always been one of the most troublesome in the *International List*. The difficulties have arisen over the two axes of classification that are of particular statistical interest; namely, circumstances of accident or means of injury, and nature of injury. Each of these represents an important aspect of injuries although in a particular analysis one axis may be more valuable than another. As a consequence this section has always represented compromises which frequently were quite unsatisfactory because they answered neither one problem nor the other and, furthermore, the terms often were not mutually exclusive.

In developing this proposed code for both morbidity and mortality statistics, the problem of Section XVII has been attacked boldly and a dual classification suggested. One classification is on the basis of the nature of the injury, the other on the means of injury or the so-called, "external cause." In order to distinguish which classification is used the letter "N" has been placed before the code numbers of the first arrangement and the letter "E" placed before the second. Both classifications should be considered as integral parts of the "Proposed Statistical Classification of Diseases, Injuries and Causes of Death."

Too much importance should not be attached to the broad section headings of the proposed code as these 17 group titles are not included in the numbering scheme of the code itself. Although they serve as useful guides to an orderly grouping of the inclusions of the list, the committee considers that the similar broad headings of the current *International List* do not represent a collection of disease conditions that is sufficiently consistent with any single axis of classification to be either statistically stable or functionally useful. Every revision in the past has shifted diseases from one section to another in such a fashion that the groups have seldom remained comparable over long periods of years. The section headings have been retained, however, as they show the general structure of the proposed classification and its similarity to that of the *International List*.

The proposed classification is ready for preliminary and unofficial study and trial by interested agencies in this country and elsewhere. Another meeting of the committee will be held early in 1947, at which time consideration will be given to all comments and suggestions concerning the structure of the proposed list and its usefulness as a single code for both mortality and morbidity statistics.

As chairman of the Subcommittee on the Sixth Revision of the International List of Cause of Death of the Committee on Research and Standards of the American Public Health Association, I particularly wish to invite your interest and careful review of this proposed classification. The Association has not only a duty to discharge, but also a strong tradition of national and international leadership to maintain in connection with this fundamental activity.

Bacteriological Procedures in Sanitary Air Analysis*

SPECIFIC BACTERIOLOGIC PROCEDURE

A JOINT meeting of the Subcommittee on Bacteriological Procedures with the Committee on Air Sterilization and Odor Control of the American Society of Heating and Ventilating Engineers was called on June 4, 1945, in New York City to consider routine procedure for a sanitary survey of ventilation in accordance with six suggestions offered by Professor Winslow for establishing sanitary ventilation on a design basis; these procedures, adopted at a previous meeting on January 22, 1945, follow:

1. Obtain agreement on a method of determining the number of streptococci present in air.
2. Establish a standard of performance and state the permissible number of streptococci per cubic foot of acceptably clean air.
3. Establish the concentration of streptococci which may be found in various types of occupied rooms under average and under extreme conditions such as obtained during a cold epidemic.
4. Establish the number of air changes required to reduce the various degrees of pollution to an accepted standard by means of outside or purified, recirculated air.
5. Establish a basis on which to determine the cost to obtain the desired standard condition by the use of ultra-violet light or a combination of ultra-violet light and air change.
6. Determine the cost of obtaining standard conditions by use of aerosols sprayed into the air for comparison with cost to produce the same standard condition by means of proper air change and ultra-violet radiation.

Bacteriologic Procedure in the Evaluation of Methods of Control of Airborne Infection (Wells, Winslow, and Robertson, 1946) were thoroughly discussed and it was agreed that specific procedures would be submitted to the subcommittee for approval. The following resolutions were adopted:

VOTED: THAT the ASHVE T.A.C. on Air Sterilization and Odor Control recommends to the Committee on Research that funds be allocated to enable a Sanitary Survey in accordance with the "Bacteriologic Procedures in Sanitary Air Analysis" to be undertaken under the auspices of the Committee, and THAT the Wells centrifuge be used as the collecting device for at least the first survey that is made.

VOTED: THAT this Joint Committee recommends to the ASHVE Committee on Research the steps suggested by Dr. Winslow as a basis for procedure for carrying out a Sanitary Air Survey.

At a meeting in New York on September 22, 1945, it was agreed that for the time being the specific bacteriologic procedure now being applied in a comprehensive sanitary survey of ventilation in schools by the New York State Department of Health (as described below) would be adopted tentatively.

It was further agreed that sampling devices should be compared.

First, samplers for sanitary air analysis should be capable of collecting nuclei from droplets coughed or sneezed into the atmosphere—proved for the air centrifuge (Wells and Riley, 1937,

* Report of the Subcommittee on Bacteriological Procedures of the Special Committee on Standard Methods for the Examination of Air, administered by the Committee on Ventilation and Atmospheric Pollution.
Published subcommittee reports, *Year Books*, 1936–1937, 1937–1938, 1938–1939, 1939–1940, 1940–1941, 1941–1942.

and Phelps and Buchbinder, 1941), and for the slit sampler (Bourdillon, Lidwell, and Thomas, 1941)—by removal from 10 cubic feet of air of more than 100 times as many nuclei of atomized cultures as deposit on a Petri plate in 10 minutes. The test is easily performed by atomizing into the air of a room with a Fragrantmist * vaporizer a diluted culture of *Escherichia coli* and testing the air with sampling instruments, simultaneously with Petri plate exposure.

Second, it was agreed that suggested media should be compared with those now being used by the New York State Department of Health for the culture of significant organisms.

Third, the practicability of methods in field investigations as well as in laboratory studies should be compared.

TENTATIVE PROCEDURES OF SANITARY AIR ANALYSIS USED BY THE NEW YORK STATE DEPARTMENT OF HEALTH

Apparatus

The Wells Air Centrifuge adjusted to deliver one cubic foot of air per minute shall be used to collect samples in both liquid and solid media.

Special Pyrex centrifuge tubes for use with the Wells centrifuge shall be used to collect all samples taken in the centrifuge.

Petri plates 10 cm. in diameter with glass tops shall be used.

Media

(F_1) Tryptose agar † (for use in Petri plates and centrifuge tubes)

Agar	2.0 per cent
Beef extract (Bacto)	0.3 " "
Tryptose	0.5 " "
Dextrose	0.1 " "
Water to make	100 " "

(F_2) Air enrichment broth (Difco formula)

Tryptose	1.0 per cent
Proteose-peptone No. 3	0.7 " "
Yeast extract	0.3 " "
Lactose	0.5 " "
Disodium phosphate	0.25 " "
Brom thymol blue	3 ml./lit. of 0.4 per cent sol.
Gentian violet	1:4,000,000

(F_3) Gentian violet blood agar (F_2) containing 2.0 per cent agar, 2 p.p.m. gentian violet and blood (rabbit or horse) 50 gr./900 ml.

(F_4) Beef-infusion broth (for streptococci, Wadsworth, 1939)

Beef	450 grams
Water	1000 "
Peptone (Difco Proteose)	20 "
Dextrose	0.02 per cent

Sampling

The samples shall be collected in rooms which have been in normal use for not less than 1 hour before sampling. Temperature, humidity, number of persons and their activity shall be recorded, together with the previous attendance during the 20 minutes directly preceding the test. The number of windows open and the number, position, and apparent operation of any germicidal units, such as ultra-violet lights, shall also be recorded.

Five Petri plates, previously poured, containing tryptose agar (F_1) shall be exposed simultaneously for 15 minutes. One of these plates shall be placed approximately 2 feet from each corner and one in the center of the room; all shall be supported 30 inches above the floor. During this 15 minute period, one 5 minute centrifuge sample shall be taken in 20 ml. of agar medium (F_1) poured from a thermos bottle and cooled to about 55 ° C. before placing in the centrifuge.

During the same 15 minute period another 5 minute centrifuge sample shall be taken in 20 ml. of air enrichment broth (F_2).

Incubation and counting

The exposed plates and agar tubes

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* Manufactured by Walton Laboratories, Inc., Irvington, N. J.

† This agar is similar to that used for examination of milk (A.P.H.A. and A.O.A.C., 1941) except that skim milk is not added, and the agar concentration is increased to provide a stiffer medium for use in the centrifuge tubes.

shall be incubated for 18-24 hours at 37° C. They shall be counted with a Quebec colony counter, or other suitable device. If a centrifuge tube contains more than 300 colonies, a fractional part may be counted, but this fraction must include an entire lengthwise section of the tube.

The exposed broth in the centrifuge tube shall be divided into five equal portions, each representing the bacteria contained in one cubic foot of air. These shall be incubated for 24 hours at 37° C. at which time any tubes which have a yellow color shall be streaked on blood agar (F_3). All tubes which show no yellow shall be reincubated for another 24 hours and any yellow tubes appearing at that time shall also be streaked on blood agar, containing 1:500,000 gentian violet. The blood agar plates shall be incubated for 48 hours and observed for *alpha* or *beta* hemolytic colonies. Any such colonies shall be fished to streptococcus broth (F_4), incubated for 24 hours at 37° and examined, using the Gram stain.

To obtain the settling count per square foot per minute, the median of the counts of the five Petri plates shall be taken.

The volume count per cubic foot equals the centrifuge count divided by 5.

The broth shall be reported as number of tubes positive and number negative.

EQUIPMENT FOR AIR SANITATION STUDY

Sanitary Air Analysis

Wells air centrifuge
25 ft. electric lead
Centrifuge tubes for Wells centrifuge (sterile)
Petri plates
Tripod Petri plate holders—30 inches high
Pint thermos bottles
Pouring stoppers for thermos bottles
100 x 15 test tubes (sterile)
37° incubator
Quebec colony counter
Hand tally
Sterile 10 ml. pipettes graduated in 1/10 ml.
Loop
Needle

Sanitary Ventilation Test

4 Fragrantmist Atomizers
3 25 ft. leads
1 tube colony counter
(in addition to equipment listed above)

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Yellow Fever Vaccination, Simple or Associated with Vaccination Against Smallpox, of the Populations of French West Africa by the Method of the Pasteur Institute of Dakar

MÉDÉCIN-GÉNÉRAL MAURICE PELTIER

Dakar, French West Africa

THE absence of yellow fever in the French territories of West Africa is now almost entirely the result of mass vaccinations of both the European and native population. Since 1941, about 15 million vaccinations were performed—a figure which corresponds almost to the total populations under census in those territories.

A control campaign of such magnitude has only been possible on account of the simplicity of the method of preparation and application of the vaccine used. The method was developed at the Pasteur Institute of Dakar by Messrs. M. Peltier, C. Durieux, H. Jonchere, and E. Arquie. The difficulties of war times rendered impossible any widespread publication of these important works, and it seems appropriate now to draw attention to them.

The first experiments with this mode of vaccination date from 1939 and the papers relating to them have been published in the French scientific journals.[1,2] Vaccination against yellow fever, however, had been practiced in the French territories of Western Africa since 1934, the vehicle being the neurotropic virus of the mouse, first by the procedure of Sellards-Laigret (vaccine phosphate in three injections), and later by the Laigret process (vaccine phosphate mixed with egg yolk). This mode of vaccination proved its efficacy, but the practical difficulties involved were an obstacle to its large diffusion.

Convinced that only the vaccination of the native masses could remove the danger of propagation of yellow fever, the Pasteur Institute of Dakar sought a simpler method which could be more easily given wide application. Its primary object was to replace subcutaneous inoculation, which requires a considerable number of syringes and needles rigorously sterilized, with inoculation by the simple application of virus to cutaneous scarifications.

The passage of the pantropic virus to the organism through contact with the shaven or scarified skin had been obtained previously in the *Macacus rhesus* in 1928 by H. Beeuwkes[3] and also by E. Marchoux.[4]

The Pasteur Institute of Dakar experimented with the process of penetration of the neurotropic virus of the

mouse through scarification. The first experiments were made in November, 1938, on young *Macacus rhesus* monkeys. The virus utilized was the neurotropic virus of the French strain at the 238th passage.

One drop of a glycerine suspension of the powder of the dried virulent mouse brain was deposited upon scarifications made on the abdomen. The virus was detected in the blood of the animals from the 4th to the 8th days. No febrile reaction was observed. The test of sero-protection made 30 days after the experiment proved strongly positive.

The same procedure was then repeated on man and the results were identical. For the first six subjects who were thus inoculated (all volunteers), the virus was found in the circulation around the 4th, 5th, or 6th day after vaccination. Only one showed a slight reaction of fever during the 7th day. Subsequent tests in all the series gave positive sero-protection.

Thus the idea occurred of associating the yellow fever virus with the Jennerian virus in order to achieve with only one operation a combined vaccination against yellow fever and smallpox.

The two vaccine viruses were mixed at the moment of application and suspended in glycerine. The combined vaccinations were performed first on the *Macacus rhesus* and then on man. On the latter, the operations were performed in the beginning under environmental conditions that facilitated surveillance, in the Navy at Dakar and in the village schools; and subsequently, attention was gradually directed to subjects of both sexes and all ages, including more than 50 children from six months to one year old. A test for sero-protection made before the experiment made it possible to retain only those subjects who presented a negative test. No severe reaction was observed, except in some cases a slight feverish condition.

The sero-protection test performed a month later showed that immunity against yellow fever had been acquired in 90 per cent of the cases.

On the other hand, all the subjects that were receptive to the smallpox vaccine virus presented vesicles in the same proportion as those observed when the same vaccine was used alone, that is, in 16 per cent of subjects already vaccinated several times against smallpox and 81 per cent of subjects supposedly never before to have been vaccinated. The antivariolic vaccine used in this experiment, which was performed on 741 persons, was prepared from a culture made by H. Plotz.

These first experiments led to the following definite conclusions:

1. The neurotropic yellow fever virus applied to cutaneous scarifications penetrates into the organism and produces immunity against yellow fever.
2. The association of the neurotropic antiamarillic virus with the antivariolic vaccine makes it possible to obtain protection against both yellow fever and smallpox.
3. The two immunities establish themselves simultaneously and independently of each other in the same manner as they would under two separate vaccinations.

However, before making current practice of this method of vaccination in the African bush, the Pasteur Institute of Dakar decided to make sure once more that the neurotropic virus present in the peripheral circulation a few days after vaccination could not, through passage by the Stegomyia, regain its pantropic properties and bring about outbreaks of yellow fever in the neighborhood of the vaccinated subjects.

Already a certain number of authors had observed that the neurotropic virus, after a great number of mouse passages, does not pass easily to the mosquito, and, whenever it happens to pass, there

is no evidence that the strain returns to its original viscerotropic types.[5-9]

The Pasteur Institute thought it advisable, nevertheless, to pursue the experiments to a conclusion by working under optimum conditions, *i.e.*, by operating in Dakar during the season which is the most favorable to the development of the natural infection of that mosquito—the hot and humid part of the year which is the yellow fever season in Senegal.

The results of this last experiment were published in March, 1939.[10] Even under those optimum conditions, it has been confirmed beyond any doubt that:

1. It is almost impossible for the neurotropic virus to develop or even to maintain itself in the Stegomyia.

2. When, by any chance, the neurotropic virus is so maintained the Stegomyia is unable to transmit it by biting, even to the most sensitive of the animals—the *Macacus rhesus*—and much less to man.

In view of the above results, a vaccination campaign comprising 100,000 inhabitants of Senegal was authorized and undertaken during the months of May, June, and July, 1939. Those vaccinations were performed in a region where no case of yellow fever had been noticed for a long time, with a view to observing more easily any accidents that might occur both among the vaccinated individuals and their neighbors. The vaccines were very well tolerated. The neighboring population was very carefully observed, and no manifestation of yellow fever, not even the slightest, has been noticed despite the prevalent breeding of the Stegomyia.

The results of the vaccination against smallpox were controlled 8 days after performance. The tests for sero-protection, carried out only on subjects who had had negative tests before the experiment, followed 6 weeks after vaccination. Among the 1,630 sera thus tested, 1,559 were found positive, or 95.6 per cent.

Other mixed vaccination campaigns embodying scores of thousands of inhabitants of the Ivory Coast and the Sudan were carried out in 1940 and 1941 under the direction of the Pasteur Institute of Dakar with the coöperation of the personnel of the Assistance Medical Indigene (Office of Medical Assistance to the Natives). The results obtained were as good as those secured in the first experiments.[11-12]

The facility and safety of the new method having thus been established, and in view of the numerous dangers confronting the troops stationed in French West Africa, the public authorities decided in the latter part of 1941 to make vaccination against yellow fever by the method of the Pasteur Institute of Dakar compulsory for all the military and civilian populations of those regions. It was further decided that the yellow fever vaccination should be associated with the vaccination against smallpox each time the administration of the latter was deemed necessary.

The Services d'Hygiene et de Prophylaxie (Bureau of Public Health and Prophylaxis) were already organized to administer vaccinations to all the native population within a period of 4 years. A 4 year plan of mixed vaccinations was then started and carried almost to completion, in spite of all the difficulties inherent in the war and post-war periods of 1942–1946. On January 1, 1946, the total of simple and mixed vaccinations against yellow fever reached the figure 14,330,735 for a total population of about 16 million inhabitants.

Table 1 gives the details for each annual operation.

These results were submitted to the Quarantine Commission of UNRRA by Surgeon General Peltier. It was agreed that an experimental study would be made under the auspices of UNRRA in order to ascertain the value of the pro-

cedure so as to permit the eventual official recognition of the Dakar method of immunization in the matter of international sanitary regulations.

This experiment took place in France

TABLE 1

Yellow Fever Vaccinations by Scarification
Civilian Population
(Total French West Africa and Togo)
Population = About 16 Million Inhabitants

	Simple Vaccine	*Mixed Vaccines*	*Total*
1939	2,760	98,873	101,633
1940	64,982	232,675	297,657
1941	371,097	1,128,868	1,499,965
1942	281,468	2,585,340	2,866,808
1943	459,339	2,475,883	2,935,222
1944	391,066	3,265,510	3,656,576
1945	538,684	2,434,190	2,972,874
Total	2,109,396	12,221,339	14,330,735

NOTE: The total, taken on December 21, 1945, of the yellow fever vaccinations performed *among the Military* (Navy and Air Corps included) amounted to 232,357.

in July, 1945, in accordance with the protocol drafted by the experts of the Quarantine Commission and accepted by the French sanitary and military authorities. It was performed on 600 men of a division destined for the French Expéditionary Corps of the Far East. The men chosen had never been out of France nor had they ever been submitted to any vaccination against yellow fever. Their ages varied from 21 to 30 years.

The subjects were divided into three groups, as follows:

Group A: To be immunized by scarification with yellow fever vaccine prepared by the Pasteur Institute of Dakar.

Group B: To be immunized by scarification with the Dakar yellow fever vaccine mixed with the vaccine against smallpox.

Group C: To be immunized by hypodermic inoculation with vaccine 17-D.

All of the said operations were performed in the presence of representatives of the UNRRA Commission.

The reactions were very carefully observed. It was agreed that the inoculated men should continue to lead a normal life but would, from the military point of view, be kept almost at rest for a period of one week, particularly on the 4th and 5th days after vaccination.

These prescriptions were followed in regard to the groups B and C, which showed only the usual slight reactions to such operations, namely, a rise of temperature and headache, in about 10 per cent to 12 per cent of the cases.

On the other hand, the men constituting Group A, due to some misunderstanding, were subjected to a severe physical effort which included a march on foot of 15 kilometers on hilly terrain and a stop of several hours in the hot sun. This fact presumably was responsible for the reactions observed on the 4th and 5th days, which were much more numerous—up to 35 per cent of the subjects. No serious reaction, however, was registered.

As regards the results of the vaccination against smallpox (Group B), 36 definite reactions characterized by the development of vesicles, were noted. We thus had 16 per cent of positive results, which is indeed a very good proportion since all the subjects had already been vaccinated against smallpox several times before. The vaccine used was the dried vaccine of the Institut de Vaccine de Paris (Vaccine Institute of Paris).

In order to determine the results of the yellow fever vaccination, blood samples were taken 35 days after inoculation. Moreover, blood serum was obtained also from 30 non-vaccinated men of the same regiment who had never been out of France.

Each sample of serum was divided between three ampoules, of which one was destined for the Pasteur Institute of Dakar, and the other two for UNRRA. The laboratories did not know the origins of the sera.

Finally, UNRRA announced that on

the subjects who had received the yellow fever vaccine of Dakar alone, the sero-protection test had been positive in 98.94 per cent of the cases. On the subjects that had received the yellow fever vaccine of Dakar and the vaccine against smallpox at the same time, the sero-protection test was positive in 97.93 per cent of the cases.

Consequently, in accord with the opinion expressed by the Quarantine Commission, the Standing Technical Committee on Health of UNRRA unanimously decided to acknowledge the validity of the vaccine of the Pasteur Institute of Dakar from the international standpoint.

The following are the details of the preparation and utilization of the vaccine:

1. *Preparation of the Vaccine*—

The virus used is of the French strain which has actually been carried to the 256th–258th passage in mouse brain. A dried mouse brain preserved in vacuum and cold storage is finely ground up in 5 ml. of physiological salt solution. The resulting suspension is centrifuged and the supernatant fluid is inoculated in doses of 0.03 ml. into as many mice as necessary. Only those mice that show definite paralysis on the 4th and 5th days after inoculations are sacrificed. The brains are then removed. Controls for sterility are made by inoculating culture media under aerobic and anaerobic conditions. Each brain is placed in a numbered small glass tube placed in a refrigerator at —25° C.

When all the brains have been removed and frozen, they are placed in a vacuum chamber with calcium chloride and put into the refrigerator at —25° C. The vacuum chamber is connected with an oil pump which produces a vacuum and permits perfect desiccation after a period of 3 to 4 days.

The dried brains known to be sterile are very finely ground in a mortar, alone at first, and then with infusorial earth, to which powdered Kaolin is later added. To one measured volume of brain powder two volumes of sterile inert powder are added. The mixture thus obtained is again dehydrated under vacuum at —25° C. for 24 hours. A second test for sterility is made.

The powder, verified sterile, is then divided between ampoules with the aid of a measuring spoon. Each measuring spoon corresponds to 1/10 of a brain and represents 100 doses of vaccine, each whole brain thus giving 1,000 doses of vaccine. The vaccine titer is the amount which will kill a mouse with regularity at a dilution corresponding to one part fresh virus in one million parts.

The ampoules of vaccines, sealed under vacuum, are stored at a temperature of —4° C. The potency of the vaccine persists for 2 months after leaving the laboratory, provided it is kept in an icebox. The vaccine may be transported at ordinary temperatures, if for not more than several days.

2. *How to Use*—

At the moment of using, the contents of an ampoule of 100 doses is poured into a mortar. There is then added, drop by drop, 2 ml. of a gum solution, stirring continuously with a shaker. The gum solution has proved to be far superior to glycerine. In fact, the gum is much less fluid and dries rapidly. After two to three minutes, a thin film is formed which keeps the virus fixed upon the scarified region. The solution used is of gum arabic harvested in Senegal, saturated, rigorously neutralized, filtered, and sterilized.

For the mixed vaccination, the anti-smallpox vaccine virus most generally employed is the dried vaccine prepared by the Vaccine Institute of Paris. The two viruses are carefully mixed in the mortar before the admixture of the gum solution.

The percautions to be taken at the gatherings for vaccination are the same as those recommended for the practice of Jennerian vaccination in the tropical regions. The vaccination campaigns ought to be carried out, as far as possible, during the least hot seasons, at the first hours of the day and *always* in the shade.

With the vaccine style, two drops of vaccinal suspension are deposited on the deltoid region. Through each drop, two parallel scarifications of 0.5 cm. in length are made. Surveillance of the vaccinated persons should be exercised for about 5 minutes to make sure that they do not wipe off the vaccine. When the gum has dried entirely, the surveillance my cease.

It is, therefore, evident that the operation is very simple, requiring a minimum of material, and that it can be carried out in the shortest space of time. Finally, this method of scarification is in general well accepted by the African population, who, on the other hand, often fear the subcutaneous injections.

Those are the reasons that assured the success of the method of the Pasteur Institute of Dakar. French Africa is beginning to reap the fruits of the effort. The cases of recognized yellow fever have progressively decreased despite the regular investigations made concerning all febrile affections more or less suspected and the practice of viscerotomy.

Thus there were 17 confirmed cases in 1941, 10 in 1942, 12 in 1943, 2 in 1944, only one doubtful case in 1945, and none at all during the first semester of 1946. Among these cases of yellow fever, 6 were in individuals who were supposed to have been vaccinated by the Dakar method.

It is probable that almost all of these cases have to do with persons hostile to the vaccination who deliberately wiped off the vaccines immediately after the scarification. In the majority of the cases the virus had been placed in suspension in glycerine and not in gum.

It is, therefore, essential that the operations of vaccination be well organized and supervised. Actually, this service is well organized and the results seem to indicate that the large majority of the inhabitants of the regions in which vaccination has been practised are definitely in a state of immunity against yellow fever virus.

An inquiry has just been made concerning the native populations of two villages of Senegal, one having been vaccinated four years ago, and the other seven years ago. For the first village, 85.9 per cent of the 106 sera taken at random showed a positive sero-protection test (after four years). For the second village, vaccinated seven years ago, there were 82 per cent positive tests among 72 sera taken.

These results of long duration obtained in the bush, far from the conditions realized in the laboratory, are excellent and indicate the confidence one may place upon the wide use of the above mentioned method, carried out with the periodicity of vaccinations every four years.

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Chinese Public Health Association Is Established

The Chinese Public Health Association was organized in May, 1947, during the Nanking meeting of the Chinese Medical Association with which the new group is affiliated, although it is an autonomous association of public health workers in China, including engineers, nurses, and others outside the medical profession. P. Z. King, M.D., the Vice Minister for Public Health, was elected President, and the Secretary is Yü Huan-wen, M.D., Professor of Public Health, National Central Medical College, Nanking.

It was reported at the meeting of the association that the Chinese translation of the report on the Control of Communicable Diseases, published through six editions by the American Public Health Association, had been translated into Chinese. This report has been adopted as an official statement by the National Health Administration of China. It was recalled that much of the text of this report had been prepared in agreement with representatives of the medical staff of the British Ministry of Health, that the epidemiologic information contained in the report had been approved for distribution through U.N. R.R.A. channels, that the text had been approved in principle by the American Red Cross, and by the Surgeon General, United States Army, and that it is official with the U. S. Public Health Service and United States Navy.

Allergy in Brucellosis*

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SINCE the work of Fleischner and Meyer[1] in 1918, and of Burnet[2] in 1922, it was established that *Brucella* infections, like tuberculosis, elicit a state of allergy which can be detected by an intradermal reaction with bacterial extracts, as did the former, or with broth culture filtrates, as did the latter of these authors. Burnet found that this reaction could be used for the diagnosis of brucellosis, and this finding was confirmed by many authors after him. Tapia and del Valle[3] in 1928, by making a comparative study in cases of brucellosis and controls, observed that *Brucella* suspensions could be used for the same purpose and that this antigen was probably more specific. A complete review of the literature on this subject has been made by Leavell and Amoss[4] up to 1931, to whose paper the interested reader is referred. The bacterial suspension was found to be a superior antigen to the broth culture filtrate, in the diagnosis of brucellosis, by Mitra,[5] Fornaco and Bua-Fazio,[6] de Fermo,[7] Giordano,[8] and others. Leavell and Amoss (*loc cit.*) made intracutaneous tests in a small group of cases of undulant fever and in controls using as antigens bacterial suspensions, saline bacterial extracts, a soluble substance prepared according to the methods described for streptococci by Lancefield,[9] and Ando,[10] and a broth culture filtrate. They concluded that heat-killed bacterial suspensions seem to have more specific action than bacterial filtrates. Notwithstanding, several authors have preferred to use bacterial antigenic fractions rather than the whole bacterial cell for the skin test in the diagnosis of brucellosis. Huddleson, Johnson, and Hamann[11] have employed the nucleoprotein fraction which they call brucellergen. This substance has been used by Keller, Pharris, and Gaub,[12] by Angle, Algie, Baumgartner, and Lunsford,[13] by Memfee and Poston,[14] and by others with satisfactory results. Some authors have objected to the use of bacterial suspensions because of the severe reactions which are induced, particularly the abscess formation at the site of the injection. This in our opinion is due to the large doses which have been employed.

Yeckel and Chapman[15] have used concentrations as turbid as No. I of the nephelometer of barium sulfate; McBryde, Daniel, and Poston[16] used bacterial suspensions standardized by comparison of turbidity with the 1:1,000 U. S. Public Health Silica Standard diluted farther 1:15; Goldstein[17] has employed a suspension with 500 million bacteria cells per ml.; Favorite[18] used suspensions with 800 and 80 millions per ml., and Angle, Algie, Baumgartner, and Lunsford (*loc. cit.*) 600 million per ml. It seems to us that these doses have been taken arbitrarily, without any previous study which would justify them. It appears to us also, that in any studies of allergy in infections, the antigen used should

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be as complete and natural as it is found in the living bacterial cell if we want to have a complete picture and not to miss some of the qualitative and quantitative characteristics of the phenomenon. For these reasons we have engaged in studies of allergy in brucellosis to the whole bacterial cell, as a contribution to the knowledge of this very important problem. Our study undertakes several points that we consider interesting both from the practical and from the purely theoretical points of view. These are:

1. The sensitization and character of allergy of laboratory animals experimentally infected or injected with dead *Brucella abortus* and *melitensis*.

2. The frequency of positive skin reactions to different concentrations of *Brucella* suspensions in supposed normal persons and in proved cases of brucellosis. The results of this part of the study would enable us to fix the proper dose to detect *Brucella* allergy in infected persons

3. The differences of skin reactivity to *Br. melitensis* and *abortus* in cases of brucellosis. The results of this study would enable us to decide whether it is possible to distinguish the species of *Brucella* in a case by means of the allergic skin reaction.

4. The intensity of the allergic skin reaction at different periods after the onset of the disease and its fate after repeated specific stimulus with various intradermal doses of bacterial suspensions, and the influence of these on the course of the disease.

This would enable us to visualize whether it is possible to desensitize against *Brucella* and if this would have any influence on improvement and recovery of the cases.

The purpose of this paper is to describe our studies of the points mentioned, and the results obtained.

METHODS

Two antigens were used throughout our experiments. One was a saline suspension of *Br. abortus* and the other a saline suspension of *Br. melitensis*. A stock suspension in saline solution was standardized by turbidity to number 3 of the MacFarland nephelometer, having approximately one billion bacterial cells per ml. and from this tenfold dilutions in 0.85 per cent NaCl solutions were made. The suspension with 100,000 cells per ml. was labeled dose 1, the suspension with 1,000,000 cells per ml., dose 2; the suspension with 10,000,000 cells per ml., dose 3; and that with 100,000,000 cells, dose 4. The suspensions were prepared with 48 hour cultures of smooth strains of *Br. abortus* No. 3 and *Br. melitensis* No. 2456, except for the repeated specific stimulus in cases of brucellosis, in which the suspensions were prepared with the strains isolated from each case by hemocultures. The *Brucella* were killed with formalin 0.2 per cent.

The skin reactions were made by injecting 0.1 ml. of the antigen intradermally with a 26 gauge needle and tuberculin syringe.

The reaction was read 48 to 72 hours after the injection, and classified as follows:

Edema 5 to 9 mm. in diameter + (one plus)
Edema 10 to 19 mm. in diameter ++ (two plus)
Edema 20 to 29 mm. in diameter +++ (three plus)
Edema 30 mm. or more in diameter ++++ (four plus).

For the study of the frequency of positive skin reactions to different concentration of *Brucella* suspensions in supposed normal persons, and in proved cases of brucellosis, doses 1, 2, and 3 were injected each into different groups of normal persons. In cases of brucellosis, dose 1 was used first; if it was negative, dose 2 was injected; and if this was still negative, dose 3 was used 7 days later.

For the study of the differences of skin reactivity to *Br. melitensis* and *abortus*, both antigens were used. One antigen was injected into the right forearm, and the other into the left forearm of proved cases of brucellosis var.

melitensis or at different sites of experimentally sensitized guinea pigs. Dose 2 was used; if the reaction was negative or if no difference was observed between the reaction to both antigens, then dose 3 was injected. The diameter of the erythema and edema of the reaction to both antigens was measured in mm. The average reactions and the percentage giving any difference were calculated for all cases studied.

For the study of the intensity of the allergic skin reaction at different times after the onset of the disease, we skin tested with dose 2 of *Brucella melitensis* several groups of cases of brucellosis which were at different periods of the disease. The size of the edema in the largest diameter in positive reactors was measured and the average for each group calculated.

For the study of the fate of *Brucella* allergy in brucellosis after repeated specific stimulus, we injected into the skin of 35 patients with brucellosis several and repeated doses of the homologous antigen to the species of *Brucella* infecting the case, if this was isolated and identified, or to the antigen giving stronger reaction. We started the injections with the smallest dose giving ++ reaction and when the reaction to the previous injection had disappeared repeated it as many times as necessary for this dose to give a one plus or less reaction; then we continued with the next stronger dose, and so on until the case recovered, or up to 20 injections were given. A numerical value was given to each type of reaction for each dose of antigen; the smallest numerical value (1) was given to the weakest type of reaction (+) to the largest dose of antigen (dose 4); the next numerical value (2) was given to the next stronger type of reaction (++) to the same dose, and so on, until the largest numerical value (16) was given to the strongest reaction (++++) to the smallest dose (dose 1). With these numbers were calculated the average numerical values for the observed reactions to the doses of antigen injected after a given number of injections were received in each case, as well as the average numerical values of the average values of the reactions observed in all the cases receiving up to the stated number of injections. Then the corresponding type of reaction for the corresponding dose of antigen to this average numerical value was obtained. In this way the average intensity of the observed reactions after receiving up to any number of injections of any dose of antigen was estimated for all the cases studied, thus giving the picture of the fate of the allergy after repeated specific stimulus with various intradermal doses of bacterial suspensions.

The influence of the repeated specific antigenic stimulus on the course of the disease has been only estimated by the improvement in symptoms, the gain in weight and strength, and the more or less rapid recovery of the cases. No controls were observed to estimate whether or not the length of the disease was significantly shortened. Any conclusion in this respect will not be based on statistical analysis but rather on clinical impression.

For the study of sensitization of laboratory animals we infected 4 guinea pigs, 2 with *Br. abortus* and 2 with *Br. melitensis*, by the subcutaneous route and with 0.5 ml. of a 24 hour broth culture. We also injected 4 rabbits with 8 progressive doses of 0.1 to 1 ml. of a *Brucella* suspension with one billion cells per ml. The injections were given at 4 day intervals. Two rabbits were injected with the *Br. abortus* antigen and two with the *Br. melitensis* antigen. Every 15 days after the last injection all rabbits were skin tested each with doses 2, 3, and 4 of *Br. abortus* and *melitensis* antigens. Two female rabbits were passively sensitized by the injec-

tion of 2 ml. of blood serum of one of the rabbits actively sensitized as has been described. Twenty-four hours later they were sacrificed and one of the uterine horns was used for the hypersensitive test following the Dale technique. Tyrode solution was used as the isotonic medium and 0.1 ml. of *Brucella* suspension No. 3 as the inciting allergen.

RESULTS

Sensitization of laboratory animals—Guinea pigs experimentally infected with *Brucella abortus* or *melitensis* gave one month later a negative reaction to the skin test with dose 2 of Brucella suspensions, to dose 3 a + reaction, and to dose 4 a ++ reaction. No difference was observed between the reactions to the same doses of *Br. abortus* and *melitensis*.

The rabbits actively sensitized with suspensions of dead *Brucella* reacted negatively to the skin test within 1 month of sensitization, but 1 to 2 months later they gave positive skin reactions. The type of reactions were: + reaction to dose 2; ++ reaction to dose 3, and ++ reaction with nodule to dose 4. The reactions were always larger for the homologous antigen, the difference being about 2 mm. for each ten mm. diameter of reaction with the heterologous.

The uterus of passively sensitized rabbits reacted to contact with *Brucella* suspensions by contractions that appeared after a period of incubation of 20 to 22 minutes. There was not any apparent difference between the response to the homologous and the heterologous antigen. The reaction was highly specific as shown by control tests.

Frequency of positive skin reactions in normals and in cases of brucellosis—The results on the frequency of positive skin reactions to different concentrations of *Brucella* suspensions in 298 supposedly normal persons and in 78 proved cases of brucellosis are given in Table 1. As shown in this table, dose 2 gave the greatest difference between the frequency of positive skin reactions in

TABLE 1

Frequency of Positive Skin Reactions to Different Concentrations of Brucella Suspensions in Supposedly Normal Persons and in Proved Cases of Brucellosis From 3 to 22 Months After Onset

	No. of Cases		% Positive		Average intensity of reaction in positive reactors	
Dose	Normals	Brucellosis	Normals	Brucellosis	Normals	Brucellosis
1 (10,000 orgms.)	31	24	6.4	41.6	+	+
2 (100,000 orgms.	141	34	8.5	88.8	+	+
3 (1,000,000 orgms.)	126	20	26.1	100.0	+±	++

TABLE 2

Allergy in Brucellosis to Brucella Suspensions

Differences in skin reactivity to Br. melitensis and Br. Abortus in cases of brucellosis var. melitensis

	Dose 2 (100,000 orgms.)		Dose 3 (1,000,000 orgms.)	
	Br. melitensis	Br. abortus	Br. melitensis	Br. abortus
Average diameter of erythema mm.	23.8	19.2	30.3	29.5
Average diameter of edema mm.	14.6	10.4	14.7	10.9
% showing larger erythema to Br. melitensis	50		48	
% showing larger edema to Br. melitensis	56.2		70.6	
Number of cases studied	16		17	

TABLE 3

Allergy in Brucellosis to Brucella Suspensions

Average skin reaction to Brucella at different periods of the disease

Dose 2 = 100,000 orgsms. x 0.1 ml.

Period of the disease when first skin tested	*Less than 1 month*	*1 to 3 months*	*3 to 6 months*	*6 months to 1 year*	*1 to 5 years*	*5 years and over*
Number of cases	6	10	10	13	5	4
Number of positives[1]	1	6	9	12	5	4
Average skin infiltration in mm.	1	7	11	15	12	21
Type of reaction	−	+	++	++	++	+++

[1] All negative reactors to dose 2 were positive to dose 3 at the time of this reaction or later.

cases of brucellosis (89 per cent) compared with normal persons (8 per cent). The intensity of the local reactions was about the same with dose 1 and 2 in positive reactors, but was much stronger with dose 3. No general reactions were observed with dose 1, 40 per cent general reactions occurred with dose 2, and 50 per cent with dose 3 in positive skin reactors.

Of the 47 "normal" persons who gave positive skin reactions to any of the *Brucella* suspensions, 20 were studied further to detect actual or past *Brucella* infections. Of these, 6 gave positive agglutination reactions from 1:25 to 1:50; 17 were classified as susceptible, and 3 as immunes according to the Huddleson, Meyer, Gould, and Paulson[19] opsono-phagocytic index. Most of these supposedly normal persons with a positive skin reaction gave a history suggesting past or present *Brucella* infection.

Differences in skin reactivity to Br. melitensis and abortus in cases of brucellosis—The results on the differences in skin reactivity to *Brucella abortus* and *Br. melitensis* in cases of brucellosis var. *melitensis* are tabulated in Table 2. It is shown in this table that more than 70 per cent of the cases gave a stronger reaction to the homologous antigen. With dose 3 the difference in reactivity was shown in a larger percentage. As similar results had been obtained in experimentally sensitized rabbits it is felt that the diagnosis of the species of *Brucella* can be made by the skin test with suspensions

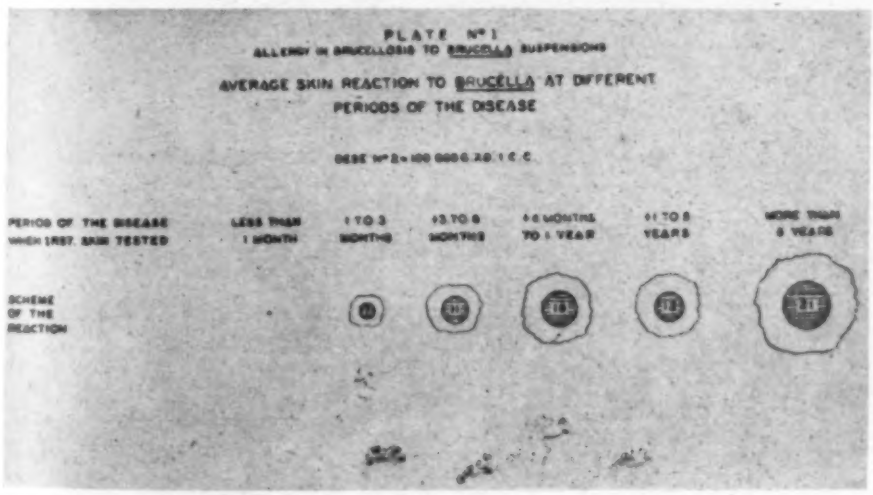
PLATE Nº 1
AVERAGE SKIN REACTION TO BRUCELLA AT DIFFERENT
PERIODS OF THE DISEASE
LESS THAN 1 MONTH
1 TO 3 MONTHS
3 TO 6 MONTHS
6 MONTHS TO 1 YEAR
1 TO 5 YEARS
MORE THAN 5 YEARS
SCHEME OF THE REACTION

Dark area = Edema
Light area = Erythema
Figures inside the dark area = Diameter in mm.

TABLE 4

Allergy in Brucellosis to Brucella Suspensions
Average skin reaction to Brucella after repeated specific stimulus

Time after onset when injections started	*No. of cases*		*Average intensity of reactions after receiving the stated number of injections* [1]				
			1-3	4-7	8-11	12-18	16-19
Before		Numerical values	5.7	7.1	7.4	7.2	8.2
6 months	20	Int. of R. to D3 [2]	++	+++	+++	+++	++++
After		Numerical values	8.2	7.5	7.2	5.9	5.2
6 months	15	Int. of R. to D3	++++	+++±	+++	++	+

[1] Injections were given at weekly average intervals.
[2] Intensity of reaction to dose 3 (1,000,000 organisms).

of *Brucella abortus* and *Br. melitensis*.

The intensity of the allergic skin reaction at different times after the onset of the disease—The results on this point are tabulated in Table 3, and the scheme of the type of reactions in Plate I. As shown in this table, allergy to *Brucella* suspensions in brucellosis seems to appear after one month has elapsed from the onset of the disease and to increase thereafter with time; as more time elapses the reactions are stronger. We have seen cases 5 to 25 years after the onset of the disease with +++ positive skin reactions to dose 2 of *Brucella* suspensions.

The fate of Brucella allergy after repeated specific stimulus—The results of our studies on this point are tabulated in Table 4 and a scheme is given in Plate II. It is shown in this table that the allergy decreases as the specific stimulus is repeated, arriving to a state, after 16 to 19 injections have been given, in which a one plus reaction is observed with the highest dose of antigen we have used, dose 3. This desensitization only occurs when the specific stimuli are started 6 months or later after the onset of the disease. When these are started within 6 months of onset the allergy increases up to a ++++ average reaction to dose 3 of our antigen in the same period. As the injections of antigen were given at weekly intervals, it can be seen that in

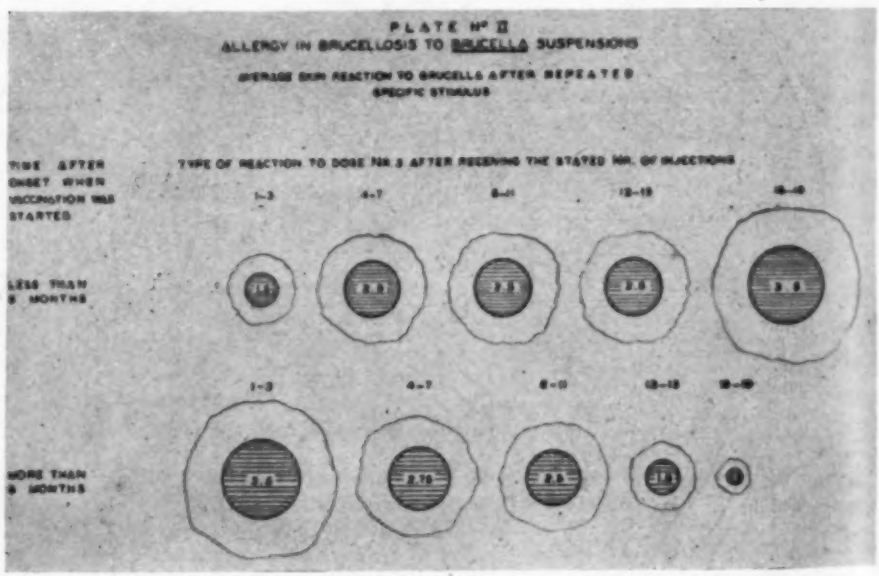
PLATE Nº II
ALLERGY IN BRUCELLOSIS TO BRUCELLA SUSPENSIONS
AVERAGE SKIN REACTION TO BRUCELLA AFTER REPEATED SPECIFIC STIMULUS
TYPE OF REACTION TO DOSE NR 3 AFTER RECEIVING THE STATED NR. OF INJECTIONS
1-3
4-7
8-11
12-18
16-19
LESS THAN 6 MONTHS
MORE THAN 6 MONTHS

Dark area = Edema
Light area = Erythema
Figures inside the dark area = Diameter in cmts.

less than 5 months the allergy increased or decreased notably under the influence of the repeated specific stimulus, something that is very different from what occurs normally with allergy in cases of brucellosis, as shown in Table 3 and Plate I.

The influence of repeated specific stimulus on the course of the disease—The results of our study on the influence of repeated specific stimulus with various intradermal doses of bacterial suspensions on the course of the disease, are summarized as follows:

Of the 15 patients desensitized with several doses of *Brucella* suspensions, 5 recovered when desensitization was achieved, that is, when 16 to 19 injections were given. Seven recovered before desensitization was reached, when 8 to 18 injections were given, and 3 improved but suspended treatment before complete recovery. The 20 patients in which allergy increased have improved notably; 14 are still under treatment and the others suspended it before recovery. The clinical impression is that cases of brucellosis recover in from 2 to 5 months when they are desensitized under the influence of repeated specific stimulus in this lapse of time, and those which are not desensitized in this same lapse of time improve notably while under repeated specific stimulus, but will take longer to recover as well as to be desensitized.

SUMMARY AND CONCLUSIONS

Formalin killed saline solution suspensions of *Br. abortus* and of *Br. melitensis* have been used in the study of allergy in supposedly normal persons and in proved cases of brucellosis in doses of 0.1 ml. of concentrations from 100,000 to 10,000,000 organisms per ml. injected intradermally. *Brucella* allergy in experimentally sensitized guinea pigs and rabbits was also studied. In these laboratory animals positive skin reactions to *Brucella* suspensions were observed one month or more after previous sensitization; in guinea pigs the reaction was the same to the homologous or the heterologous *Brucella* antigen, while in rabbits the reaction was stronger for the homologous specific antigen. Female rabbits were passively sensitized, and the uterus gave a positive Dale reaction. In supposedly normal persons the skin test was positive to the 10,000 bacteria dose in 6.4 per cent; to the 100,000 bacteria dose in 8.5 per cent, and to the 1,000,000 bacteria dose in 26.1 per cent. In proved cases of brucellosis the reaction was positive in 41.6 per cent with the first dose, in 88.8 per cent with the second dose, and in 100.0 per cent of the cases with the third dose. The skin reaction was stronger to the homologous specific antigen in 71 per cent of the cases with the third dose and in 56 per cent with the second. In the cases studied, the allergy to *Brucella* suspensions appeared after one month had elapsed from the onset of the disease, and increased thereafter until the strongest reactions were observed more than 5 years later. The allergy in cases of brucellosis decreased as specific repeated stimulus progressed, arriving to a state, after 16 to 19 injections were given, in which a very weak reaction was observed to the strongest dose we used. This desensitization occurred only when the specific stimulus was started 6 months or later after the onset of the disease. Patients with brucellosis recovered in from 2 to 5 months when they were desensitized under the influence of repeated specific stimulus by the intradermal injection of *Brucella* suspensions; patients who were not desensitized in this same lapse of time improved notably.

Based on the foregoing results we arrive at the following conclusions:

1. Laboratory animals are actively sensitized either with dead or living *Brucella* suspensions, and passively sensitized with sera of previously sensitized animals.

2. Suspensions of formalin killed *Br. abortus* or *Br. melitensis* seem to be adequate antigens for the detection of allergy in brucellosis. The proper initial dose for this purpose is 0.1 ml. of a suspension with one million bacterial cells per ml. injected intradermally. If the reaction is negative a second injection with a suspension ten times stronger is indicated. A positive reaction is obtained in all or almost all the allergic cases without undue local or general reactions.

3. The diagnosis of the species of *Brucella* between *melitensis* and *abortus* is possible in a large percentage of the cases of brucellosis by the allergic skin test if the two antigens, in the same concentration, are injected at the same time in different sites. The reaction is stronger with the homologous antigen.

4. Allergy to *Brucella* in cases of brucellosis seems to appear one month or more after the onset of the disease and to increase thereafter indefinitely.

5. By repeated specific stimulus with intradermal injections of small and increasing doses of the homologous *Brucella* suspensions, all cases of more than 6 months' duration can be desensitized in from 2 to 5 months. Cases of less duration will take longer.

6. By means of these repeated intradermal injections of increasing doses of the homologous *Brucella* suspensions, all brucellosis patients who become desensitized improve, and most recover within 2 to 5 months of treatment. The ones which are not desensitized in this time will take longer to recover.

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THE HEALTH OFFICER AND THE HEALTH COUNCIL

THE day of defensiveness in public health has gone by. The health officer has no longer the need to protect his rights and his prerogatives. If he be a trained man, he will find himself recognized without question as the leader of the health program of his area. His problem is an offensive one—the visualization and execution of an ever-widening program for applying our knowledge to the promotion of health in a positive sense.

The health officer should be the chairman of the Board of Strategy for this campaign; but he and his staff cannot wage the war alone. When the health program envisaged only sanitation and the control of epidemic diseases, the official agency could perhaps do the whole job. But today, when the urgent health needs are for housing and nutrition and medical services, for care of chronic diseases, for mental hygiene, for health education, it is clearly impossible to attain major results without a widespread and vital public understanding and support.

We have seen the power of community participation during recent months in the triumph of the health-district plan in Illinois and in the revolution worked under the stimulus of Dr. Florence Sabin in Colorado.

One of the best ways to realize the pulse of progress is to attend a conference of health workers and see what they are thinking about. At a recent meeting of the New England Health Institute in Durham, N. H., the keynote of one speaker after another was the need for wider community participation in the public health program; and it was made clear that "participation" meant just that. Some health officers, who have come only part way out of their shells, consider that what they need is a cheering section, ready to respond with vociferous advocacy of any measure they, as cheerleaders, may indicate. Beyond the ivy walls, human nature does not respond—or only sporadically responds—to such an appeal. Continuous and convinced support implies an understanding of a problem and a sense of sharing in finding the solution.

None of us has all the answers. The man on the spot is inevitably limited by tradition and habit. Rare is the executive who does not sometimes feel—if he does not say—"It's always been done that way here." Nor has the outside expert, called in for counsel, any ready-made solution. If he is an experienced surveyor he talks with everyone, inside and out, who is in a position to evaluate either the

delivery or the receiving end of public health services. From such conferences, in the light of general principles, on the one hand, and local situations and local personalities, on the other, he formulates a tentative program of advancement; and if he sells it to the lay people, something may happen. The ideal result is only attained when the leaders in all the official and voluntary agencies concerned organize themselves for a comprehensive and continuing self-survey.

Such a type of coöperative program planning is the objective of a well conceived Health Council; and that is why we asked Mr. Bleecker Marquette to prepare the Special Review Article for this issue of the *Journal*.

Mr. Marquette points out the results which are manifest in a community where there is no health planning. He shows how a good Health Council should be organized and what it can accomplish. He points out that there are only as yet a score or so of active Health Councils in this country; and that only a few of them are really fulfilling their function well. The Health Council is a relatively new idea; but it a sound idea and one that is full of promise.

Do you really know how effectively the activities of the health department and the board of education in your community are correlated so as to produce maximum results in the education of the individual child and his family? Is the sanitary inspection service of the health department tied in with the efforts of a local housing authority so that condemnation and compliance orders may fit into a plan, and so that the provision of good housing may keep pace with the elimination of bad housing? Are there adequate community facilities for the rehabilitation of the tuberculosis cases which you send to a sanatorium? Are the services of the various public health nurses of your area coördinated into the most effective practicable pattern? How inadequate are the institutional provisions for the care of chronic illness, and what ought to be done about it? Are the services of venereal disease control supplemented by a decent community recreation program? Is your local safety council putting all its energies into industrial plants and neglecting the much larger problem of home safety? How many hours of child guidance service are available in the community, and how many hours of service at mental hygiene clinics for adults? (The writer knows of two New England cities of the same approximate size where the latter figure is in one case 6 and, in the other, 43.)

These are examples of some of the vital health problems which confront us. They are the problems with which the Biggses and the Chapins of the future will successfully contend. But they cannot solve them singlehanded. Such questions can be answered only by real coöperative effort, by enlightened and continuing program planning. In a good Health Council, under the leadership of a good health officer, lies the hope of the future.

PLANNING FOR THE CONTROL OF STREAM POLLUTION

A RECENT issue of the *Journal of the New England Water Works Association*, presents an interesting symposium by official representatives of the six New England states on the important problem of stream pollution abatement.[1]

The most fundamental necessity in this field is, of course, the prevention of pollution with intestinal bacteria of lakes and inland waterways which are used as sources of potable water, or by bathers, to an extent which threatens to produce epidemics or occasional cases of communicable disease. This basic end has been essentially attained in the areas in question. It is doubtful if any appreciable

amount of typhoid fever or any other intestinal disease can be attributed to water in the New England States. It is somewhat disconcerting, however, to learn from E. L. Tracy, one of the participants in the symposium we are reviewing, that only 6 per cent of the sewered population of Vermont and less than 3 per cent of the total population of that state, are served by sewage treatment plants.

The problem, however, is much wider than protection against the germs of water-borne disease. Health is an ideal which is not attained merely by escaping typhoid fever. Recreation is an important factor in health as a positive objective, and esthetic satisfaction cannot be omitted from an adequate concept of healthy living. Our lakes and streams are among our most priceless community assets; and to permit them to become open sewers or offensive disposal tanks for factory wastes is a short-sighted policy.

Obviously, the problem is incapable of any simple universal solution. L. W. Trager points out that the conflicting issues are presented with special clearness in New Hampshire. This state has two major assets—its recreational facilities and its industries; and the two interests are directly opposed to each other in their views on stream pollution. In certain streams, the process of pollution has gone so far that the water could only be restored to recreational use at a prohibitive cost which—whether expended by the state or by industry—would ultimately be passed on to the consumer. In such a case, nothing can be done except to keep the resulting nuisance within bearable proportions. In other areas, the value of residential and recreational property is so great that it is clearly to the economic interest of the community as a whole to insist on high standards of purity.

A primary question in any given state, concerns the designation of the proper state authority to make decisions in regard to this problem of local standards for each individual watershed. Among the states included in the New England symposium, responsibility rests with the State Board (or Department) of Health in Massachusetts, Rhode Island, and Vermont. In Connecticut, the task is divided between the State Department of Health (concerned with health aspects of pollution of potable waters, bathing waters, and shellfish-growing areas) and the State Water Commission (concerned with broader phases affecting fish life, use of water for industry, damage to property, and interference with navigation). W. J. Scott of the Health Department, reports close coöperation between the two state agencies; but the maintenance of two boards and two laboratories in such closely related fields does not seem in accord with sound administrative policy. A more logical procedure was in force in earlier years in Connecticut, which centralized technical work in the Health Department and provided an Industrial Wastes Board, including representatives of the Health Department, industry, and the public, to formulate policies. Maine also has a separate State Sanitary Water Board, established in 1941, and New Hampshire has a separate Water Pollution Board, each with its own laboratory. In New Hampshire, the State Water Pollution Commission includes the State Health Officer with representatives of the Governor, the Forestry and Recreation Department, the State Planning and Development Commission, the Fish and Game Department, the Water Resources Board, and representatives from industry and municipalities. The Director of Sanitary Engineering of the State Health Department serves as technical secretary. A plan of this general type seems highly desirable. The basic objective is health in the broad sense; but the problems are too complex to be solved by the Health Department alone, without the voice of spokesmen for the broader social and economic issues which are involved.

Most of these New England States have rightly conceived their first task to be the mapping out of the state so as to define what may be considered a reasonable objective for each individual watershed. In Maine 6,000 miles of inland waters have already been surveyed and classified under the usual four main headings as follows:

Class A—Drinking water sources or waters used for growth of market shellfish
Class B—Waters used for bathing
Class C—Waters used for recreational boating, fishing, seed oyster cultures, or industrial supply after treatment
Class D—Waters used primarily for navigation or transportation of wastes without nuisance

The New Hampshire Board states its objectives in this regard as follows: "To classify streams, lakes and tidal waters (a) according to present highest use (present condition and use), and (b) according to potential highest use, being mindful of the industrial, economic, geographic, and social factors." Its State Water Commission has been materially strengthened by the 1947 Legislature. In Vermont, the Health Department organizes each major river basin (of which there are 12 in the state) by holding a mass meeting, in coöperation with the State Chamber of Commerce, in the largest municipality of the area. At this meeting a river-basin committee or sanitary council is formed with representatives from each individual town; and subsequent meetings are arranged to reach smaller local areas. This seems like an admirable instrument of public health education.

A. D. Weston cites some highly interesting results from the studies made along this line in Massachusetts. One stream, on which there is a large recreational basin, fulfils the standards for Class B on the average (less than 1,000 coliform organisms per 100 ml.), but has at times shown a coliform density of over 100,000 per 100 ml., so that its beaches have had to be closed for bathing. Another stream, generally considered as of high purity, has on some occasions shown over 10,000 coliforms per 100 ml. as a result of unapproved sewers in villages where even the existence of such sewers was not generally known. Mr. Weston claims for his state "one of the most, if not the most highly polluted streams known," with a biochemical oxygen demand once attaining the level of 1,420 p.p.m.

It is most encouraging to see that the basic knowledge of conditions, essential to a rational system of control, is being accumulated so effectively in such states as those which have been cited. Actual progress in bringing desirable standards into effect is still, however, not far-reaching. The state departments of health have ample powers to safeguard waters of Classes A and B by forbidding the use of non-conforming streams or lakes for water supply or bathing or the taking of shellfish and by forbidding bathing or other pollution of established public water supplies. In Connecticut, the state law is so strict as to forbid bathing even in remote tributaries of such supplies, to a degree which unreasonably interferes with normal recreational use. With regard to nuisance problems and—in particular—with regard to the transformation of an actual Class D stream into a potentially Class C stream, or an actual Class C stream into a potentially Class B stream, accomplishments have not as yet been notable.

Statutory powers of enforcement are in some instances far-reaching. In New Hampshire, all natural lakes having an area of 20 acres or more ("Great Ponds") "are public waters, and are held in trust by the state for public use; and no corporation or individual shall have or exercise in any such body of water any

rights or privilege not common to all citizens of this state." Under a 1947 Act, all wastes discharged into such ponds must be adequately treated and disinfected.

The State Water Commission of Connecticut is empowered to make orders after hearing, directing any person, firm, or corporation to use or to operate some practicable and reasonably available system or means which will reduce, control, or eliminate pollution, having regards to the rights and interests of all persons concerned, provided the cost of installation, maintenance, and operation shall not be unreasonable or inequitable.

Massachusetts has an even stronger law, providing that the State Department of Health with the approval of the Governor and Council shall "prescribe and establish rules and regulations to prevent pollution or contamination of any or all of the lakes, ponds, streams, tidal waters, and flats within the Commonwealth." Such rules and regulations were formally prescribed and approved in September, 1945. These regulations are far-reaching. They provide that no excremental matters or house wastes, or garbage and manure, and no manufacturing waste or putrescible animal matter shall be discharged into any lake, pond, stream, tidal water, and flat "in a manner which may be injurious to the public health, or may tend to create a public nuisance, except as may be approved by the Department of Public Health when in the opinion of said department the best practicable and reasonably available means to render harmless such refuse, waste product, polluting liquid, substance, putrescible organic matter, or wastes have been provided in accordance with plans approved by the department." This is strong medicine; and, in 1946, four municipalities and several industries were actually brought into court on charges of nonconformance.

In Maine, a law was passed providing that all new industries, established after July 24, 1945, must have a license to discharge industrial wastes into any body of water; but no machinery has been provided for dealing with existing industries.

In Rhode Island the State Health Department has power to compel the elimination of pollution and has done so in certain cases. Mandatory legislation for control of pollution was sought in Vermont in 1943, but "so amended before passage that it practically legalized pollution instead of preventing it." A bill introduced in the 1947 session established a new water conservation board which should produce results. In this state, and in Rhode Island (where a new program has been recently adopted), the authorities are seeking to pave the way for treatment of municipal sewage by laws legalizing service or rental charges to finance bonds for sewage treatment.

All of the New England States except Maine (whose streams flow directly to the sea) have taken steps—or will shortly take steps—to implement interstate action through a New England Interstate Compact Commission.

Connecticut, Massachusetts, New Hampshire and Rhode Island appear to have overall stream pollution laws with potential teeth in them; and in Massachusetts and Rhode Island these laws have been actively enforced in the broader field, beyond the protection of public water supplies. It will be of great interest to observe the Vermont approach by way of a constructive educational program.

REFERENCE

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NURSING EDUCATION IS A PROFESSIONAL PROBLEM

WHENEVER a social situation becomes pressing we may look for the advocates of nostrums and cure-alls, often more deadly than the disease. The present shortage of nurses results from various causes, among which economic factors are of major importance. It is not surprising—though it is unfortunate—that this situation has tempted various committees of eminent surgeons and internists to rush into the breach with the happy idea that the remedy can be found by shortening the nurses training course and returning to the low standards which prevailed a quarter century ago.

This is a familiar phenomenon in many fields. Zealous alumni are frequently quite ready to tell college faculties how their sons should be taught. Writers in some of our leading popular weeklies have recently been pontificating about medical education and demanding that its standards should be lowered—in precise parallel with medical criticism of nursing education. Criticism in itself may serve as a useful stimulus. The unfortunate thing about recent pronouncements of medical committees is their repercussions on the reputation of the medical profession itself. The prestige of the physician must rest on the respect which the public feels for the medical expert; and when the medical expert assumes the right to dictate in a field where he is not an expert, he destroys public confidence in his wisdom in his own area.

Education is a highly technical problem, and the distinguished practitioner of medicine may be—and commonly is—a layman in the educational field. The subject of nursing education happens to have been explored in two exhaustive studies[1, 2] in which educators, nurses, hospital administrators, physicians, and public health experts coöperated. The reports of these studies have been universally accepted by all competent authorities. They rightly form the basis for our present program of nursing education. For the practitioner of medicine to ignore them is as ill-judged as it would be for a teacher to brush aside the accepted principles of medical science.

There is, however, one related aspect of the problem of nursing shortage on which the physician can—and should—make an important contribution. The training of the professional nurse is progressing along reasonably sound lines; and it has been found in all educational fields that the way to long-range increase in personnel is to raise rather than to lower standards. There are, however, real possibilities of supplementing the work of the nursing profession by the employment of trained nursing attendants, a subject which we shall discuss in a subsequent issue of this *Journal*. How large the field may be for this type of subsidiary worker—and how that field should be defined—must be carefully studied. This is not a technical problem of education but a problem of administration. It should be analyzed by joint committees of physicians and nurses in the field of private practice, by joint committees of hospital administrators and nurses in the institutional field, and by joint committees of health administrators and nurses in the public health field.

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1. Committee for the Study of Nursing Education. *Nursing and Nursing Education in the United States.* New York: Macmillan, 1923.
2. Committee on the Grading of Nursing Schools, National League for Nursing Education. *Nurses, Patients and Pocketbooks,* New York, 1928.

Credit Lines

FAMILIES CAN'T LIVE IN PAPER HOUSES

The Newark (N. J.) Housing Authority continues to storm the walls of community indifference in behalf of the one-third of that city's population of nearly a half million who live in substandard housing. It starts out by supposing what would happen if a third of the city's people were stricken with tuberculosis, or a third of its houses burning. In the latter instance, it says "when the ashes cooled, money and building materials would be found for the greatest construction job in the city's history . . . Bad housing is . . . no less disastrous than sickness or fire, but it isn't front page news."

If anything can make it front page news such pamphlets as this, entitled "5,580 Paper Houses," can. This number refers to the houses planned since 1944 and awaiting action on the Wagner-Ellender-Taft Housing Bill.

With excellent satirical cartoons and irrefutable logic, this is an excellent attempt at community education. It points out again the high cost of slums and the financial returns of good housing. It also announces the birth of a fifth freedom—freedom to live with in-laws.

CANCER IN NEW JERSEY ANALYZED

The New Jersey Division of the American Cancer Society (Newark) has recently published *Cancer Mortality in New Jersey, 1920–1945.* This is a statistical analysis for the entire state and county-by-county of the deaths, death rates, age distribution, organ affected, as well as an analysis of the changing age distribution of the general population. Data for the separate counties cover only the 5 years, 1940-1945.

With this analysis available no local cancer program should be delayed because of lack of knowledge of existing conditions.

ANNALS OF WESTERN MEDICINE AND SURGERY

The Western readers of Credit Lines will be particularly interested in the new *Annals of Western Medicine and Surgery* which began publication in March under the auspices of the Los Angeles County Medical Association. Its editor is Edmund Thorvald Remmen, M.D., Assistant Professor, Department of Internal Medicine, College of Medical Evangelists. With an initial circulation of 7,500, its articles will have general rather than specialized interest, because the majority of its readers are general practitioners.

WHEN AN EMERGENCY STRIKES

The May *Oklahoma Health Bulletin* tells the story of how, when the recent tornado struck the town of Woodward (population 6,000), the State Health Department was one of the first agencies on the scene, sending sanitary engineers to test the water supply, food and drug inspectors to safeguard food supplies, x-ray and laboratory technicians to aid doctors and nurses and furnish blood plasma, tetanus anti-toxin, penicillin, and typhoid vaccine. In addition doctors and nurses from the State Department of Health were on emergency call.

In this connection it is worth noting that, according to the latest information available to us, neither the town of Woodward nor Woodward County with a total population of more than 16,000 had any organized full-time local health service. Nor in fact did any of the

counties contiguous to Woodward. Thus in a real emergency the state and other agencies had to do the job that should have been the first responsibility of local official agencies.

CHILDREN'S BUREAU ANNUAL REPORT

The 34th *Annual Report* of the Children's Bureau for the year ended June 30, 1946, the last year of the Bureau's life in the Department of Labor, was published recently. This summary of a bureau devoted to the special interests of children is well worth reading for its factual information no less than for what it unconsciously reveals about the current world. Included with the report is an 11 point action program for 1947 and 1948 of the National Commission on Children and Youth. Gov't Ptg. Office, Wash., D. C.

PUERTO RICO HONORS ITS ELDERS

Patriarchs and matriarchs in Puerto Rico occupied the limelight on April 18 as their countrymen throughout the island commemorated El Dia de los Ancianos—"The Day of the Aged"—with colorful tributes and festivities. El Dia de los Ancienos has been celebrated annually in Puerto Rico since 1933, when it was designated by law as the day on which Puerto Ricans would pay particular tribute to their aged.

GROWTH OF BLUE CROSS

The Philadelphia Blue Cross reports that it now has over a million members. March enrollments were nearly 17,000, the largest single month in its 8 year history. In the first quarter of 1947, the 40,000 new members were almost double the same quarter in 1946. Due to rising hospital costs, its rates have been increased by about one-third, but benefits have also been increased.

The annual report of New York's Associated Hospital Service, recently released, shows a membership of nearly three million. Over half a million were enrolled during 1946, representing a gain of 37 per cent over 1945. During the year more than a quarter of a million persons were hospitalized for an average of nearly 10 days per patient and at an average cost per hospital stay of nearly $75. In 1947 both payments to hospitals and charges to members are being increased. Additional member benefits are also provided.

The Blue Cross of Philadelphia and the Associated Hospital Service of New York are among 88 similar Blue Cross plans in the United States, with a total membership of nearly 26 million persons, or something less than one-fifth of the nation's population. In presenting the annual report, Louis H. Pink, the President of New York's Blue Cross, declared that in 1946 the ground work had been laid for a more effective national Blue Cross program. "The Blue Cross plans are strong because they are local organizations—but a more effective national organization would be helpful in enlarging membership and arranging for interchange of service, broader benefits, and more effective coöperation with national employers and other health agencies."

MICHIGAN'S FIVE YEAR PLAN

To establish a pattern for other states to follow in meeting the requirements of the Hospital Survey and Construction Act, the Commission on Hospital Care made a pilot study in Michigan, recently completed. The W. K. Kellogg Foundation, as a service to the people of the state, has prepared a summary of this survey with maps showing hospital service areas and the various types of hospitals and rural health centers projected by the Hospital Construction Act.

This summary of Michigan's five year hospital plan is a good illustration of a technique for informing and persuading public opinion.

ARE DOCTORS MOVING TO RURAL AREAS?

The American Medical Association's Bureau of Information in the *J.A.M.A.* for May 17, 1947, senses a "trend of returned medical officers to move away from their recent venture in city practice to accept the opportunities of more active practice in smaller communities." A number of state maps are included to show the difference between 1946 and 1947 in the ratio of patients to practising physicians in these states. This trend will be worth watching to see whether it continues to offer a rosier outlook for medical care in rural areas.

FAREWELL TO THE SOCIAL SECURITY BOARD

The Social Security Board sings its swan song in its 11th Annual report for the fiscal year 1946. In some 100 pages it summarizes the administrative changes arising out of the President's Federal Reorganization Plan which went into effect in July, 1946, and which transferred the Board's functions to the Federal Security Administrator. Apart from the analysis of current activities, this report is valuable for its summary and recommendations based upon 11 years of experience. The report includes also a section on prepayment of medical care costs. Available from U. S. Gov. Ptg. Office, Washington 25, D. C. *25 cents.*

MORE ABOUT TRAINING OF RURAL DOCTORS

In February (p. 214) we reported that Mississippi currently has a scholarship loan program for training 47 of its own citizens to become doctors and practise in rural areas of the state. Now the Mississippi State Medical Education Board has published a pamphlet, *Doctors To Come*, which tells more about this program and illustrates the story with pictures, pictographs, and illustrative charts. This ought to help those "Mississippi men and women in whose hearts burns the torch of desire to serve their fellowmen and to help those who suffer," to choose a career.

At present 60 doctors are being trained, 2 of whom will be ready to practise in 1948, 9 in 1949, and all of them by 1952 or earlier. Unfortunately only 7 are Negroes in a state whose Negro population is almost half of the total. The 60 are being trained in 11 medical schools in 7 states and the District of Columbia.

The pamphlet also has some fertile ideas for other states contemplating similar programs. Applicants and others interested should address: Mrs. Maria Voskamp, Executive Secretary, Mississippi State Medical Education Board, Room 37, North St. Building, Jackson 35, Miss.

Kentucky has also taken note of the fact that for its rural population of more than two million it has only one practising doctor for more than 2,100 persons. The Kentucky State Medical Association and the University of Louisville School of Medicine have launched a joint state-wide campaign for a Medical Scholarship Fund of $100,000. This fund will be used for loans to students who could not otherwise afford a medical education. Students must agree to practise one year in a rural area for each year of financial aid received.

Contributions in any amount are received at Medical Scholarship Fund, 620 So. Third Street, Louisville 2, Ky.

ABSTRACTING THE WORLD'S MEDICAL LITERATURE

Excerpta Medica of Amsterdam, Holland, has undertaken a project of abstracting the world's literature in the fields of research and clinical medicine. Fifteen separate subjects, among them Public Health, Social, and Industrial Medicine, will each be covered by a monthly journal published in English. The editorial board of each journal is comprised of authorities from many

countries, including liberal representation from the United States. The series will replace the old German Zentralblätter and Berichte series which will not be revived.

Vol. I No. 1 of Section XIII, on Dermatology and Venereology, April, 1947, has been received by Credit Lines. It abstracts 289 articles under 25 different subheadings of the main subject. Its board of 25 editors represents 12 European countries and the United States.

The yearly volumes for the various sections will range from 600 to 1,800 pages, and the annual subscriptions from $15 to $45. Section IV on Public Health, Social and Industrial Medicine will aggregate 900 pages annually and has a subscription price of $22.50. Williams & Wilkins Company, Baltimore 2, Md., are sole agents for the United States, Canada, and Central America. A free booklet describing the series is available from the agents on request.

MAYORS TAKE A STAND ON HOUSING

The United States Conference of Mayors has published *America Can Not Afford Slums*. This is a graphically illustrated pamphlet emphasizing what has come to be increasingly recognized, that slums are a far greater drain on a community's resources by way of the costs of ill health, police and fire protection, unpaid taxes, and many other liabilities, than the public subsidies necessary to provide decent housing for the lowest income groups. This is over and above the fact that a slumless city is much more attractive than one with slums. This is good material for educating your city fathers, particularly if they are penny-wise and pound foolish. You will like it also for its excellent printing, typography, and photography. Published by the United States Conference of Mayors, Washington, D. C.

WORTH ACQUIRING

What You Can Do About Tuberculosis—This manages to be new and interesting even though it must of necessity tell the old, old story of preventing tuberculosis. In blue and white and with humorous little mannikin line drawings, it might capture the interest of someone who had hitherto turned a deaf ear. Available from Life Conservation Service, John Hancock Mutual Life Insurance Company, Boston 17, Mass. Also worth while is a one page list of health publications still in print and available, in limited quantities, from the Company.

Rabies: A Challenge to the Community—Using pastel shade illustrations that have almost come to be the Lederle trade mark, this is intended for the use of the health officer and veterinarian in organizing community programs for rabies control. Because rabies strikes only rarely, says the announcement, community indifference is the rule and can be corrected only by adult education. Copies may be secured from Rutledge W. Howard, Director of Professional Service, Lederle Laboratories, 30 Rockefeller Plaza, New York 30, N. Y.

The Hospital Act and Your Community—Local responsibility is the keynote of this pamphlet by the Division of Hospital Facilities, U. S. Public Health Service explaining the Hospital Construction Act and how it works. In simple language and excellent cartoons it brings home the message that "community freedom and community responsibility go hand in hand." It is an excellent illustration of "bureaucrats" stepping down in favor of the citizenry, as well as of health education of a high order. Available from U. S. Public Health Service, Washington 25, D. C.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.

Henrici's Molds, Yeasts and Actinomycetes—*Revised by Charles E. Skinner, Ph.D., Chester W. Emmons, Ph.D., and Henry M. Tsuchiya, Ph.D. (2nd ed.). New York: Wiley,* 1947. 409 pp. Price, $5.00.

In the 17 years that have elapsed since the first edition of this book an enormous amount of work has been done, and a great deal of new information has been brought to light in the field of mycology, so that it is now a major subject in its own right. Consequently, on the basis of a rather concise monograph on molds, yeasts, and actinomycetes written primarily for bacteriologists, the revisers of Henrici's work have been able to build an excellent textbook of 409 pages. The size and form of the book are little changed.

The emphasis of the first edition was on mycology *for bacteriologists,* and this has been admirably maintained by the writers of the 2nd edition. Technical advances are described from a functional point of view and are incorporated in a much enlarged chapter III. The medical aspects of mycology have been enlarged because knowledge in that field has enlarged. On the other hand, industrial and other aspects have also been much expanded so that the treatment of the whole subject is well balanced.

In general, the 2nd edition presents more on the activities of yeasts, molds, etc., than did the first. The sexual phenomena of yeasts and molds have been more fully described, and new developments in the field of hybridization are discussed. New classifications are given (one adapted from Stelling-Dekker replaces the old one for *Endomycetaceae*) and, in general, the whole book has been enlarged and changed where new developments have necessitated it, and large sections of obsolete material have been deleted. There is an extensive new chapter on variations; the chapters on fungus diseases are entirely revamped and enlarged; there are new chapters on biological activities, morphology and classification of yeasts and molds; new material on fermentations, spoilage and antibiotics; and much else of interest and value.

One appreciates the sympathetic attitude of the authors who, in suggesting certain mycological reference books for bacteriologists, warn that some are difficult. This bacteriologist finds such attitude throughout the book one of its most valuable features as it keeps the treatment on a fundamental and generalized level most helpful to those of us who are not, like the authors, experts in mycology. MARTIN FROBISHER

Medical Education and the Changing Order—*By Raymond B. Allen, New York: The Commonwealth Fund,* 1946. 142 pp. Price, $1.50.

Dr. Allen's monograph of the New York Academy of Medicine series on current trends in medical education, has the twin virtues of conciseness and easy readability. He brings to the subject the unusually broad academic background of a doctor of philosophy as well as a doctor of medicine, to which was added the graduate training of a surgical specialist. His years at Columbia, the New York Post Graduate, Wayne

University, and at the University of Illinois, have given him the experience to describe with authority and assurance the problems faced by the medical student, teacher, practising physician, and the patient. For both the health counsellor and patient, medical education is demonstrated to be a life-long process for which they have a joint responsibility.

While the emphasis in this volume is on today's widening horizons of opportunity presented to medical educators and physicians in the current changing social order, Dr. Allen supports his thesis with an illuminating historical account of how we have reached our present stage of development. In a society in the process of continuous dynamic change, the obvious task of education and of forms of health service is not only to adapt to meet new conditions, but to attempt to visualize them in advance. Dr. Allen points out that the organized profession has shown vigorous concern for the maintenance of high medical standards, but has failed "to exhibit sufficient social insight and aggressive leadership in moulding public opinion" in working out a more comprehensive plan for rendering medical care to the whole population.

If doctors are to be trained to provide such leadership, better educational foundations must be laid if the physicians of tomorrow are to be oriented to the full range of their anticipated fields of usefulness. The process must begin in the home and in primary school, for it has been amply demonstrated that most medical students made their decision as to career before entering high school. The function of the undergraduate college years is largely that of guidance.

Since the newer concept of medical study is to consider it to embrace the physical, psychological, and social factors bearing on health and disease, a very much broader educational base must be constructed on which to build all through the school years and extending into the internship and residency. Dr. Allen develops very clearly the newer requirements of these years of formal study. Also, he brings out the burning and unsolved problem involved in the discovery and encouragement of good teachers of medicine. Actually, this issue has become even more acute in the short time since the publication of this monograph. Unwise policies during the war and lack of adequate economic reward are resulting in a serious scarcity of young medical men and women for teaching and research careers.

Dr. Allen's little book should provide informative and interesting reading material for nursing, social service, and other allied medical groups. If the team work job which the public expects of us is to be accomplished, it is essential that all workers are informed as to what each member of the team is doing.

J. A. CURRAN

Penicillin in Syphilis—*By J. E. Moore, M.D. Springfield: Thomas,* 1947. 319 pp. Price, $5.00.

The book under report is well written and displays the clear and forceful style of the author. In the coverage of subject material it appears to be as complete as is to be expected from the state of knowledge prevailing at the time of writing. In common with all volumes devoted to a medical subject in the early stages of its development, the work risks becoming obsolete at any early date due to the rapid accumulation of data resulting from more exhaustive studies and more prolonged experience.

Many of the charts display the results produced by 300,000, 600,000, and 1,200,000 units of penicillin given over the period of one week. The schedules involving these amounts have been largely abandoned and the findings

should not be confused with the character of results which apparently may be produced by a more generous use of the antibiotic. Also, the superior value of therapies employing penicillin and arsenic as compared to penicilin alone is not being confirmed by recent analyses.

The author is wisely conservative in the matter of the value of penicillin therapy in cardiovascular and neurosyphilis because of the prolonged post-treatment observation periods which are required for an evaluation, and in the matter of differentiating reinfection and relapse, another phase of the work which cannot be resolved on the basis of presently available knowledge.

The "cumulative failure rate" is a statistical procedure which may be induced to reveal different values through the expedient of varying the time intervals which are involved in the computation. In the opinion of the reviewer, the "cumulative re-treatment rate" would seem to be more appropriate as the rate includes patients re-treated for all reasons. JOHN F. MAHONEY

Practical Nursing—An Analysis of the Practical Nurse Occupation with Suggestions for the Organization of Training Programs. *Washington: Federal Security Agency, U. S. Office of Education*, 1947. 144 pp. Price, $.55.

This *Bulletin* is notable in that it is the first effort ever made to analyze the occupation of practical nursing, and timely in that it appears at a time when the acute nursing shortage is focusing attention on the preparation and use of the practical nurse.

It gives a clear and comprehensive definition of the field as distinguished from that of professional nursing, an analysis in table form, covering 119 pages, of what the practical nurse must be able to do, what she must use and what she must know, as well as concrete suggestions for training programs.

It should prove useful to communities that are planning new schools and also to already existing schools as a criterion for evaluating their programs.

The names of the persons who were on the working committee which produced the *Bulletin* and the well known organizations which they represent lend authority to this publication.

ETTA A. CREECH

Standard Methods for the Examination of Water and Sewage— *By American Public Health Association and American Water Works Association. (9th ed.) New York: American Public Health Association*, 1946. 286 pp. Price, $4.00.

The material in the ninth edition of this standard laboratory manual for the physical, chemical, and biological analyses of water and sewage is placed in a more convenient form than any previous edition. The number of major parts have been reduced to four, related analyses are rationally grouped, confusing Roman numerals have been eliminated, and references to previous or subsequent procedures are paginated. These improvements will promote speed in use.

The principle changes are in the tests of water for odor, hardness, pH, carbon dioxide, alkalinity, arsenic, iron, chromium, magnesium, potassium, fluorides, phosphates, cyanide, tannin and lignin, residual chlorine, hydrogen sulfide, and methane. In the main the new procedures require greater analytical skill, and often call for reagents that the average laboratory will not have readily at hand. For making colorimetric determinations of iron, potassium, silica, copper, aluminum, chromium and magnesium, use of an optical or photoelectric colorimeter, or a spectrophotometer is recommended. For pH determinations, a pH electrometer is recommended. Although alternative methods will continue in use, the wider

use of instrumental methods in water analysis may be expected. A helpful feature is a brief statement of the chemical basis of the test given before each analytical procedure for water. The section on residual chlorine tests is outstandingly excellent.

There are modifications and additions to procedures on dissolved oxygen and grease and sludge tests. The use of tryptone glucose extract agar for bacterial plate counts is permitted, and lauryl sulfate tryptose broth is listed. The bacteriological control of swimming and bathing water is included among the standard methods for bacteriological examination of water, removing that topic from its provisional status in the eighth edition. EMIL T. CHANLETT

Sewerage and Sewage Treatment—*By Harold E. Babbitt. (6th ed.). New York: Wiley,* 1947. 692 pp. Price, $6.50.

The last edition of this textbook was published in 1940. During the war municipal sewerage works and treatment plants construction practically stopped, but many military installations were built. Information obtained from military establishments has been included. In comparison with former editions, the book stresses more the problems of design, methods of treatment, and operation of plants than construction. Data in the book have been brought up to date, the discussion of the rational method of determining runoff has been revised, a chapter on hydrolics has been improved, high rate filters, contact aerators and other newer developments have been added.

Practically all problems given in the appendix have been changed and many new problems have been added. Of particular interest is the extensive increase in references to current literature, numbering some 527, which increases the value of the textbook materially for advanced students and those in the field who need more detailed information than a textbook ordinarily can supply. The book is printed in clear type on good paper.

WILLEM RUDOLFS

Health and Fitness—*By Florence L. Meredith. Boston: Heath,* 1947. 325 pp. Price, $2.20.

Concentrating on the essentials for those students who wish to be able to do the things that bring pleasure, usefulness, and social acceptance, the author relates good health practices with knowledge presented through modern text, impressive illustrations, and timely examples. The numerous and varied study guides will help good teachers who naturally create heavy workloads for themselves. The vocabulary is appropriate for literate students who are at ease with clear expression.

This text will be most useful in imaginative educational systems. The memorizing of definitions, lists of characteristics and enumerated functions cannot be the basis for evaluations in a course using it. Its presentation is consistent with the author's assumption that the student is seeking knowledge about himself as a means of achieving satisfactions resulting from good health. The teacher, then, must evaluate student comprehension through discussion and ability to deal with problems, preferably actual health problems in clinical practice, laboratory demonstrations, and community public health programs. Consequently, the assumption of student literacy, ability, and interest must be matched by imagination, information, and initiative on the part of the teacher.

Having provided a wide variety of subject matter, the author places on the student much of the responsibility for profiting from this text. A non-medical reviewer of this book was impressed by the wealth of useful scientific information of interest to high school students.

The book evidences professional com-

petence readily appreciated by good students. It also provides an opportunity for exposure to the influence of a good mind. Alert students with professional possibilities and vocational ambitions will respond to it. Quite complete subject coverage is achieved through the variety of activities, age levels, and types of persons described. Students will find themselves personally involved in most chapters.

JOHN KHANLIAN

Old People—Report of a Survey Committee on the Problems of Ageing and the Care of Old People—*Chairman, B. Seebohm Rowntree. New York: Oxford University Press,* 1947. 202 pp. Price, $1.50.

This report gives the present status of social action in regard to the "care and the comfort of the aged poor" in the surveyed areas, and contains recommendations directed particularly to authorities of public and voluntary agencies.

The National Insurance Act of 1946 and the "projected" National Health Service give England stronger social legislation than we have. When the first of these two Acts comes into full operation, admission to an institution will not be a disqualification for drawing a retirement pension. Two viewpoints regarding the care of the aged, chronically ill are given.

The committee consider that the statutory inspection of all voluntary homes is desirable, but they have been unable to find a definition of a "voluntary home" that would make inspection administratively possible.

Certain concrete recommendations regarding the nature of research projects are made.

By and large, the aged in England present and have the same problems as do our old people.

This report will be of interest to all persons who are concerned with the comfort and welfare of aged individuals. With only a few changes, this committee report would be applicable to the most populous communities in this country.

JOSEPH H. KINNAMAN

The Relation of Diseases in the Lower Animals to Human Welfare—*By William A. Hagan, et al. New York: New York Academy of Sciences,* 1947. pp. 351–576.

This series of papers was presented at a conference held by the Section of Biology of the New York Academy of Sciences in March, 1946. Contents include papers on Rabies by Harald N. Johnson; Equine Encephalomyelitis by Raymond A. Kelser; Psittacosis, Ornithosis, and Related Viruses by Herold R. Cox; Brucellosis by I. Forest Huddleson; The Prevention of Plague by Karl F. Meyer; Animal Tuberculosis by William H. Feldman; Anthrax by C. D. Stein; *Erysipelothrix rhusiopathiae* Infection in Swine and in Human Beings by Joseph V. Klauder; and Animal Parasites Transmissible to Man by Willard H. Wright.

Besides the scientific contributions there is a tabulation of estimated cost of various livestock diseases in a recent year which is said to exceed $400,000,000 in the United States, with the probability that it approaches a billion dollars. Emphasis is placed on freedom in the United States from such diseases as rinderpest, foot and mouth disease, fowl pest, bovine piroplasmosis and contagious pleuropneumonia. This is a reference volume of importance which should be available in all libraries.

REGINALD M. ATWATER

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Ten Experts Say—German measles and mumps provide the strongest argument in favor of childhood exposure to certain communicable diseases. Rather than attempt to prevent the spread, physicians should encourage exposure of healthy children to chickenpox, measles, and the two infections mentioned above, this group of pediatricians advise. This does not apply to sick or debilitated children, of course, or those under 3 years old. Triple vaccines are discussed pro and con.

ANON. Pediatrics. New England J. Med. 236, 23:867 (June 5), 1947.

Health Problem in 26 States—If there is any reader of our *Journal* who does not know the essential story of rabies in man and animals he will find all he needs in this brief review article.

CHANT, H. L. Rabies. Am. J. Nurs. 47, 6:390 (June), 1947.

Bearing Babies without Pain—You've heard no doubt about the English doctor who talks his maternity patients into wanting "natural" childbirth without benefit of drugs. Well, here his method is described, inch-by-inch.

CORBIN, H. Childbirth Without Fear. Am. J. Nurs. 47, 6:392 (June), 1947.

Fourth Year of High Incidence—Not only does this paper tell where, in the U.S.A. the 25,000 polio cases of the 1946 epidemic were located, but it relates the conditions in other parts of the western hemisphere. Briefly it considers methods of spread. Recent epidemiologic data strengthen, rather than weaken, the person-to-person contact theory, says the author.

DAUER, C. C. Incidence of Poliomyelitis in 1946. Pub. Health Rep. 62, 25:901 (June 20), 1947.

Darkening Forecasts — You may think a paper on the threatening "recession" is not public health literature, but I do. If the storm hits us, it will affect public health generally and your little job too. You'll find a lot to mull over in this well documented whither-are-we-drifting analysis.

GILLMOR, D. S. Are We in for a Depression? -Survey Graphic. 36, 6:325 (June), 1947.

From Human Volunteers—We've learned that infectious hepatitis is a virus disease spread through the intestinal-oral route and can be prevented by passive immunization. Evidence is presented that it may run its course without the appearance of clinical jaundice. If you are satisfied with these few dry bones picked from the findings, then you aren't much interested in this relatively new addition to our growing list of public enemies.

HAVENS, W. P. The Etiology of Infectious Hepatitis (and) MALLORY, T. B. The Pathology of Epidemic Hepatitis. J.A.M.A. 134, 8:653 (June 21), 1947.

Structure of the Endospore—Although you may have the merest smattering of bacteriology you'll be thrilled with these electron microphotographs of bacteria popping out of germinating spores and a picture of a bacillus with what looks like warts.

KNAYSI, G., *et al.* A Study, with High-Voltage Electron Microscope, of the Endospore and Life Cycle of Bacillus Mycoides. J. Bact. 53, 5:525 (May), 1947.

Teamwork Does It—Now that the tumult and shouting have died away,

you may read in peace the last words in the care of poliomyelitis patients from the medical, psychological, and nursing angles.

LOWMAN, C. LER., *et al.* Poliomyelitis. Am. J. Nurs. 47, 6:367 (June), 1947.

Inconclusive—DDT was applied to 4-square-mile areas in 2 cities threatened by poliomyelitis. A temporary reduction of flies was achieved. Though the demonstrations taught us a lot about the difficulties and costs of wholesale fly abatement, they did not offer evidence of its value in the control of polio.

MELNICK, J. L. Fly-Abatement Studies in Urban Poliomyelitis Epidemics During 1945. Pub. Health Rep. 62, 25:910 (June 20), 1947.

Price of Neglect—When virulent smallpox hit an unprepared city, the mass vaccination program almost overwhelmed the medical and health fraternity.

PALMQUIST, E. E. The 1946 Smallpox Experience in Seattle. Canad. Pub. Health J. 38, 5:213 (May), 1947.

As the World Shrinks—Now epidemic in war-stricken areas, tuberculosis seems on the way out in lucky U.S.A. But until every country is free, no country can be entirely safe—to paraphrase a potent slogan.

PARRAN, T. The Control of Tuberculosis in the Americas. Pub. Health Rep. 62, 23:827 (June 6), 1947.

Changing Food Habits — When women make up their own minds to adopt desirable nutritional practices, they are much more likely to improve food habits permanently than if they were merely influenced by lectures. Both in increasing family consumption of milk and in securing coöperation in infant feeding, the group decision method proved superior.

RADKE, M., and KLISURICH, D. Experiments in Changing Food Habits. J. Am. Dietet. A. 23, 5:403 (May), 1947.

The Last of the Louse—Here are all the details—with how-to-do-it photographs—of the now famous Naples typhus fever epidemic which mass delousing nipped at the start.

SOPER, F. L., *et al.* Typhus Fever in Italy 1943–1945 and Its Control with Louse Powder. Am. J. Hyg. 45, 3:305 (May), 1947.

Now at the 102nd Meridian—Field surveys, covering half the country, record the eastward creep of plague via rodents and their fleas. The possibilities of introduction into more remote municipal areas by migrations or through commerce deserve continuous and expectant attention, says this student of the problem.

WAYSON, N. E. Plague—Field Surveys in Western United States During Ten Years (1936–1945). Pub. Health Rep. 62, 22:780 (May 30), 1947.

Histoplasma Capsulatum—Has the word histoplasminosis crept into your vocabulary while you still have only fuzzy ideas about the public health implications of this novelty? Then you had better master this paper, though it is mostly medical speculation. Coccidioidomycosis adds to the confusion.

ZWERLING, H. B., and PALMER, C. E. Pulmonary Calcification in Relation to Sensitivity to Histoplasmin. J.A.M.A. 134, 8:691 (June 21), 1947.

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

THE AMERICAN YEAR BOOK—1947. Edited by William M. Schuyler. New York: Thomas Nelson, 1947. 1110 pp. Price, $12.00.

AN APPROACH TO SOCIAL MEDICINE. By John D. Kershaw, M.D., Baltimore: Williams & Wilkins, 1946. 329 pp. Price, $4.50.

ATLAS OF CARDIOVASCULAR DISEASES. By Irving J. Treiger, M.D., St. Louis: Mosby, 1947. 180 pp. 244 ill. Price, $10.00.

BABIES KEEP COMING (An Anthology). Edited by Becky Reyher. New York: McGraw-Hill, 1947. 538 pp. Price, $3.75.

CLEVELAND MARKET DATA HANDBOOK. By Howard Whipple Green. Cleveland: Real Property Inventory of Metropolitan Cleveland, 1947. 77 pp. Price, $2.50.

THE CO-OPERATIVE PROCESS AMONG NATIONAL SOCIAL AGENCIES. By Ray Johns. New York: Association Press. 290 pp. Price, $3.00.

HEALTH AND REHABILITATION THROUGH CHEST TRAINING. By Samuel Delano, M.D. New York: William-Frederick Press. 142 pp. Price, $2.50.

A HISTORY OF THE AMERICAN MEDICAL ASSOCIATION 1847–1947. By Morris Fishbein, M.D. Philadelphia: Saunders, 1947. 1226 pp. Price, $10.00.

HUMAN BREEDING AND SURVIVAL. By Guy Irving Burch and Elmer Pendell, Ph.D. (rev. ed.) New York: Penguin Books, 1947. 144 pp. Price, $.25.

MARRIAGES ARE NOT MADE IN HEAVEN. By Janet Fowler Nelson, Ph.D., in collaboration with Margaret Hiller. New York: Woman's Press, 1947. 156 pp. Price, $1.75.

MEDICAL ADDENDA. Studies of the New York Academy of Medicine Committee on Medicine and the Changing Order. New York: The Commonwealth Fund, 1947. 156 pp. Price, $1.75.

METHODS OF DIAGNOSIS. By Logan Clendening, M.D., and Edward H. Hashinger, M.D. St. Louis: Mosby, 1947. 868 pp. 143 ill. Price, $12.50.

MICROBIAL ANTAGONISMS AND ANTIBIOTIC SUBSTANCES. By Selman A. Waksman. (rev. ed.) New York: The Commonwealth Fund, 1947. 415 pp. Price, $4.00.

OCCUPATIONAL DISEASES OF THE SKIN. By Louis Schwartz, M.D., Louis Tulipan, M.D., and Samuel M. Peck, M.D. (2nd ed. rev.) Philadelphia: Lea & Febiger, 1947. 964 pp. 146 ill. Price, $12.50.

THE PAPWORTH FAMILIES. By E. M. Brieger. New York: Grune & Stratton, 1946. 674 pp. Price, $12.00.

PROCEEDINGS OF THE 38TH, 39TH AND 40TH ANNUAL MEETINGS OF LIFE INSURANCE ASSOCIATION OF AMERICA. New York: Life Insurance Association of America, 1946. 182 pp. Free from publisher.

A PSYCHOLOGY OF GROWTH. By Bert I. Beverly, M.D. New York: McGraw-Hill, 1947. 235 pp. Price, $2.50.

ROCKY MOUNTAIN CONFERENCE ON INFANTILE PARALYSIS. Sponsored by The University of Colorado and The National Foundation for Infantile Paralysis. Denver: University of Colorado, School of Medicine and Hospitals, 1946. 199 pp.

SCHOOL HEALTH PROBLEMS. By Laurence B. Chenoweth, M.D., and Theodore K. Selkirk, M.D. (3rd ed.) With an Outline on School Health Administration. By Richard Arthur Bolt, M.D., Dr.P.H. New York: F. S. Crofts & Co., 1947. 419 pp. Price, $3.00.

SOCIAL ASPECTS OF PUBLIC HOUSING. An Evaluation of North Carolina Experience. By Sanford Winston. Housing Authority of the City of Raleigh, N. C., 1947. 44 pp.

STATISTICAL ABSTRACT OF THE UNITED STATES, 1946. (67th number). Compiled under the supervision of Morris H. Hansen, U. S. Department of Commerce, Bureau of the Census. Washington, D. C.: U. S. Government Printing Office, 1946. 1039 pp. Price, $2.25.

TEXTBOOK OF MICROBIOLOGY. By Kenneth L. Burdon, Ph.D. (3rd ed. rev.) New York: Macmillan, 1947. 728 pp. Price, $3.50.

TUBERCULOSIS NURSING. By Grace M. Longhurst, R.N. (2nd ed.) Philadelphia: Davis, 1947. 358 pp. Price, $3.50.

ASSOCIATION NEWS

A.P.H.A. PRESENTS TESTIMONY ON NATIONAL HEALTH ACT OF 1947

On June 27, Reginald M. Atwater, M.D., Executive Secretary of the American Public Health Association, appeared as a representative of the Executive Board of the Association before the Subcommittee on Health of the Senate Committee on Labor and Public Welfare in the U. S. Senate, Washington, D. C., to present testimony as approved by the Executive Board on Senate Bill 545, the National Health Act of 1947.

A brief digest of the testimony is appended. Readers of the *American Journal of Public Health* desiring the full testimony can obtain a copy by request from the Association, 1790 Broadway, New York 19, N. Y.

The public health professions are deeply concerned with Senate Bill 545 which relates to the medical care available to the American people and which is also intimately concerned with the organization of the health services of the federal government. It was pointed out that the official statement of the Association policy, "Medical Care in a National Health Program," adopted at the 1944 Annual Meeting, recognizes that a large portion of the population receives insufficient and inadequate medical care, chiefly because persons are unable to pay the cost of services on an individual payment basis when they are needed, or because the services are not available.

The testimony documents present inadequacies of medical care and points out that many Americans find it difficult to carry the rise in costs. It was concluded that a majority of the population does not receive adequate medical care and that these costs are decidedly uneven and unpredictable.

In the opinion of the Association, Senate Bill 545 does not meet the Association's criterion of a national program for medical care, being designed primarily to provide federal aid to the states for the medical and dental care of the needy. It is implicit in the Bill that there must be application of a means test to determine those whose incomes are sufficiently low to be eligible. In actual practice it is believed that only recipients of public assistance and those who are one step removed from this state could receive benefits under this Bill. It was further pointed out that the size of the federal appropriation is such as to represent the cost of care for only about 5 per cent of the population, to say nothing of the curtailment of these funds by the expensive as well as cumbersome administrative machinery which would be necessary to administer the means test.

Realizing that Congress may not be prepared at the moment to legislate a complete program, it was suggested that programs to satisfy some of the most urgent health needs be given priority, a procedure similar to that adopted by Congress last year when it passed the Hospital Survey and Construction Act. Reference was made to the necessity for the expansion of comprehensive preventive services to the entire population of the United States. The fact that 3,000 mothers die needlessly as a result of childbirth and that about 31,000 babies who could have been saved die in their first year demands further support of

maternal and child health services. Funds are urgently needed as well for cancer, heart disease, and diabetes. An especially urgent need relates to medical education and research. Only recently the presidents of 19 American universities joined in a warning of the uncertain future of medical education upon which medical care and public health are dependent. They declared that with present resources few if any of the 70 recognized medical schools of the United States could be confident of maintaining their programs at a high level in the future. Therefore, federal grants-in-aid for medical education and research are needed and may play an important rôle in increasing our scientific knowledge of the prevention, control, and treatment of those diseases before which we are powerless today. It was further suggested that Congress consider strengthening the Hospital Construction program by improving the formula for allocation of federal funds and providing funds for operation and maintenance in the areas of greatest need.

The American Public Health Association is already on record as favoring the establishment of a Cabinet Department of Health, Education and Security by converting the Federal Security Agency into such a department. The creation of a national health agency as an independent agency without Cabinet status as provided in S. 545 is disapproved.

An important oversight is that the Director of the Office of Medical and Hospital Care Services is required by the Bill only to have at least five years of active medical practice and to be "outstanding in the field of medicine." It was pointed out that such experience is seriously inadequate because these positions require years of training and experience in medical and public health administration, subjects not taught in medical schools and rarely included in the experience of private practitioners.

Important also is the fact that although the stated purposes of S. 545 include the phrase "to expand the activities of the Public Health Service," the organizational scheme which is outlined actually reduces the Public Health Service to a subordinate position as one of seven or more constituent units. This might result in the health services of the federal government being administered by a physician unqualified in public health and administration, who might have a position of authority over such highly qualified medical and public health administrators as the Surgeon General of the Public Health Service.

The Association went on record as believing it important to link up preventive and curative medicine, and was of the opinion that the proposed set-up of S. 545 is undesirable. It was believed that the public interest was not properly represented on the national medical care council provided in the Bill, since only three of the nine members represent consumer interest, while five of the nine, an absolute majority, are physicians. It was the opinion of the Association that the power of a national medical care council to overrule the decisions of the director with regard to approval of state plans or modification thereof is contrary to sound administrative practice.

Senate Bill 545 fails to make any provisions for federal or state standards with regard to methods of administration or quality of care. The failure to include such a requirement would permit inefficient administration of the programs by unqualified personnel. The Bill explicitly prevents federal standards of any sort. The Association stated that it was manifest that federal standards have played an important rôle in developing high quality health services at the state and local level.

One feature of the Bill was strongly approved, namely, the plans to establish

a national institute of dental research, but it was believed that the ceiling of a $600,000 appropriation was too low.

In conclusion, the Association does not consider S. 545 to represent an adequate national health program. Alternative programs have been suggested, such as the expansion of comprehensive public health services both in scope and content, federal aid to medical education and research, and liberalization of federal grants to provide hospital facilities. The proposed reorganization of the federal health services in S. 545 is believed to be administratively unsound. The inadequate requirements for the administrators of the medical and dental care programs, the lack of sufficient consumer representation on advisory boards, the power given to national advisory councils to overrule decisions of responsible administrators, the failure to require state plans to set minimum standards of administration and services, and specific prohibition of all federal standards lead to the conclusion that Senate Bill 545 does not sufficiently protect the public interest in the expenditure of public funds for medical care.

APPLICATION FOR HOTEL ACCOMMODATIONS

American Public Health Association, October 6–10, 1947

NOTE: Single rooms are very limited in number. Please arrange to occupy twin-bedded rooms.

HOUSING BUREAU, 16 Central Pier, Atlantic City, N. J.

Please reserve the following:

Hotel ..... First Choice Hotel ..... Fourth Choice

Hotel ..... Second Choice Hotel ..... Fifth Choice

Hotel ..... Third Choice Hotel ..... Sixth Choice

..... Room(s) with bath for ..... person(s). Rate $..... to $..... per room.

Arriving Atlantic City ....., hour ..... A.M. P.M. Leaving .....

NOTE: You will receive confirmation direct from the hotel accepting the reservation when made.

Rooms will be occupied by:

Name	Street Address	City	State

SEVENTY-FIFTH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
ATLANTIC CITY, N. J., OCTOBER 6–10, 1947

HOTEL RATES, ATLANTIC CITY, N. J.

BOARDWALK HOTELS

Hotels		*Total Rooms*	*Rooms with Bath*	
			Single	*Double*
AMBASSADOR	Brighton Ave.	670	$6.00–$9.00	$9.00–$14.00
APOLLO	New York Ave.	51		8.00– 12.00
BREAKERS	New Jersey Ave.	475	4.00– 7.00	5.00– 12.00
BRIGHTON	Indiana Ave.	291	7.00–	9.00– 14.00
CHALFONTE-HADDON HALL	North Carolina Ave.	1,000	6.00–10.00	8.00– 18.00
CHELSEA	Morris Ave.	400	5.25– 6.75	6.75– 15.00
CLARIDGE	Park Pl.	406	6.00–14.00	9.00– 17.00
DENNIS	Michigan Ave.	475	6.00– 8.00	9.00– 14.00
MARLBOROUGH-BLENHEIM	Park Pl.	464	6.00–10.00	9.00– 16.00
MAYFLOWER	Tennessee Ave.	280	5.00– 6.00	7.00– 12.00
NEW BELMONT	S. Carolina Ave.	100	5.00– 6.00	7.00– 12.00
PRESIDENT	Albany Ave.	500	7.00–10.00	9.00– 15.00
RITZ-CARLTON	Iowa Ave.	431	6.00– 8.00	9.00– 14.00
ST. CHARLES	St. Charles Pl.	300	5.00–12.00	7.00– 14.00
SEASIDE	Pennsylvania Ave.	235	5.00–11.00	8.00– 14.00
SHELBURNE	Michigan Ave.	300	6.00– 9.00	9.00– 12.00
STRAND	Pennsylvania Ave.	271	4.50– 6.00	9.00– 12.00
TRAYMORE	Illinois Ave.	600	6.00–14.00	9.00– 18.00

AVENUE HOTELS

Hotels		*Total Rooms*	*Rooms with Bath*	
			Single	*Double*
BOSCOBEL	Kentucky Ave.	120		$8.00
CLARENDON	Virginia Ave.			7.00
COLTON MANOR	Pennsylvania Ave.	208	$5.00–$9.00	8.00–$12.00
COLUMBUS	Pacific Ave. at St. James	100		6.00
CRILLON ★	Pacific Ave. at Indiana	49		8.00– 10.00
EASTBOURNE	Pacific Ave. at Park	75		7.50– 8.00
FLANDERS	St. James Pl.	125	5.00	7.00– 9.00
FOX MANOR	Pacific Ave. at Belmont	60		8.00– 10.00
HOLMHURST	Pennsylvania Ave.	100		7.00– 8.00
JEFFERSON	Kentucky Ave.	150	6.00	7.00– 10.00
KENTUCKY	Kentucky Ave.	110	3.50	6.00– 7.00
LAFAYETTE	N. Carolina Ave.	100	5.00– 6.00	8.00– 10.00
MADISON	Illinois Ave.	210	4.50– 6.00	7.00– 10.00
MONTICELLO	Kentucky Ave.	175		7.00
MORTON	Virginia Ave.	300	5.00– 6.00	7.00– 9.00
PENN-ATLANTIC	S. Carolina Ave.	125		7.00
RUNNYMEDE	Park Pl.	75	4.00– 7.50	6.00– 10.00
SENATOR	S. Carolina Ave.	260	4.50– 7.00	7.00– 12.00
STERLING	Kentucky Ave.	83	4.00– 5.00	6.00– 7.00
VILLA D'ESTE	Pacific Ave. at Chelsea	40		8.00– 14.00

★ Rate Includes Breakfast

See Application Blank, preceding page

WESTERN PUBLIC HEALTH MEETINGS — 1947 MODEL

There was repeated in 1947 a pattern of consecutive state and regional meetings in Western states comparable to that of 1943, 1944, and 1945. Participating in all the meetings was a team organized by the American Public Health Association and made available to the states for their programs. The team members this year consisted of Dr. Mary Crosse, Deputy Senior Assistant Medical Officer of Health (for Maternity and Child Welfare), Birmingham, England; Walter J Pelton, D.D.S., consultant public health dentist on the staff of the U. S. Public Health Service; James H. Steele, D.V.M., Chief Public Health Veterinarian, U. S. Public Health Service; Eleanor Palmquist, R.N., and Dorothy Rusby, R.N., both Assistant Directors, National Organization for Public Health Nursing; Carl E. Buck, Dr. P. H., Field Director, A.P.H.A.; Francis B. Elder, Engineering Associate, A.P.H.A., William T. Ingram, Engineering Field Associate, A.P.H.A.; Allan Twichell, Technical Secretary, A.P.H.A. Committee on the Hygiene of Housing; Charles B. Frasher, technical consultant in personnel administration, A.P.H.A. Merit System Unit; and Reginald M. Atwater, M.D., Executive Secretary, A.P.H.A.

Beginning with the meeting of the Missouri Public Health Association in Jefferson City the first week of May, the circuit moved on to Minneapolis, where a group of agencies including the State Department of Health, the University of Minnesota School of Public Health, University Continuation Center, and a new organization of public health workers in Minnesota actively participated. At the same time as the Missouri meeting a meeting of the North Dakota Public Health Association was held in Fargo attended by part of the team, reviewing plans and prospects in that state. This was followed by a one day meeting in Omaha, Neb., at which consideration was given to the wisdom of forming a state-wide organization of public health workers. Special emphasis was placed on the development of full-time city-county health units according to the plan of the State Department of Health.

The fifth meeting of the series was held in Colorado Springs under the auspices of the Colorado Public Health Association. The event of this meeting was the presence of Dr. Florence Sabin of Denver, recently featured through popular magazines for her state-wide activity in the promotion of full-time health service and in the reconstruction of Colorado's public health.

Excellent meetings of the New Mexico Public Health Association and of the Arizona Public Health Association were held respectively in Albuquerque and Tucson. The attendance of these meetings when compared with the number of full-time public health workers in these states was extraordinary, since practically every person physically able to be present was on hand.

The Northern California Public Health Association held a meeting in conjunction with the meeting of the Western Branch of the American Public Health Association in San Francisco the week of May 25. The feature of the program of the Northern California Public Health Association was the address by Dr. Mary Crosse on the care of premature babies in England.

The meeting of the Western Branch brought out more than 800 persons from eleven Western states, several of the Provinces of Canada, Alaska, Hawaii, and the Philippines. An excellent program included addresses by

the Surgeon General of the U. S. Public Health Service, Dr. Thomas Parran, by Dr. Florence Sabin, and other national leaders, but the principal part of the program was contributed by those members of the Western Branch who spoke of programs specially adapted to the Western area and operated in spite of serious difficulty growing out of sparse populations and economic conditions. This meeting was under the Presidency of Karl F. Meyer, Ph.D., who has served during the war years. His successor as President of the Branch is Dr. Florence Sabin, of Denver, recognized as one of the most dynamic leaders in the West at the present time.

The new officers of the Western Branch are:

President—Florence R. Sabin, M.D., Denver, Colo.
President-Elect—George M. Uhl, M.D., Los Angeles, Calif.
Vice-President—Mrs. Sadie Orr Dunbar, Portland, Ore.
Vice-President—Lawrence J. Peterson, Boise, Ida.
Secretary—Walter S. Mangold, Berkeley, Calif.
Treasurer—Guy S. Millberry, D.D.S., Los Gatos, Calif.

Subsequent stops were made in Boise for the Idaho Public Health Association, and in Salt Lake City for the Utah Public Health Association where meetings were held in which large numbers participated, including a good many citizens concerned with public health as a social force.

Altogether eleven meetings were held in this circuit, attended by 2500 persons, a large majority of whom would have found it difficult to attend a national meeting even if it had been held in the territory of the Western Branch. There were many expressions of appreciation for the opportunity to hear competent new speakers and especially to share the British experience as brought out by Dr. Crosse.

Inquiries already have reached the central office with reference to the possibility of a similar team of speakers being organized for a circuit in 1948. The Executive Board has indicated that if such a team is desired and is organized, first priority for the services of the Association team should be offered to states in the territory of the Southern Branch and other parts of the United States where consecutive meetings can be arranged. It is apparent that the Western states again will orient a good many of their state meetings to the meeting of the Western Branch which will be held in Salt Lake City, Utah, the last week of May, 1948. Persons interested in a possible circuit for 1948 should communicate with Dr. Atwater at the A.P.H.A. office.

Appreciation of the American Public Health Association has been extended to the National Organization for Public Health Nursing, the United States Public Health Service, the British Information Services, and other agencies which have coöperated in making the circuit possible, and which have provided the services and travel expense of their representatives.

THE 1947 EVALUATION PROJECT

During the past twelve weeks, calculating machines and typewriters have hummed steadily in the offices of the Committee on Administrative Practice checking the figures, the additions, and the rates in an effort to give a grade of GOOD on every single item on 127 Evaluation Schedules received for grading and analysis in the 1947 Evaluation Project.

These schedules were sent in by local health departments in 22 states, the

Territory of Hawaii, and the Provinces of Manitoba, Ontario, and Quebec. Despite shortages of personnel, mass vaccination programs, and other factors which prevented some units from carrying the evaluation project through to completion, participation in 1947 increased 25 per cent over last year.

State Participation—State programs, using the evaluation process for improving and extending local public health units, have been inaugurated in Illinois, Kansas, Michigan, Mississippi, New York, and Texas. Since 1942 when this phase of the program was initiated by the Association, Michigan and Texas have accelerated their activity each year, and a large proportion of the 1947 schedules came from those two states—44 from Michigan and 33 from Texas. Under the plan operating in those states, technical field staffs are trained in the use of the *Schedule* in order to stimulate full-time health departments to use it effectively. Standardized record systems are being developed. Grading has been undertaken and the results are then compared with the Association grading. The information thus obtained has been used for program planning, for health education, for more equitable allocation of funds, for in-service training, and in many other ways.

Local Participation—Many of the participating units have chosen to submit schedules annually during the past five years or longer. Comparison of the 1947 grading with that for a previous year, in almost every instance, showed decided improvement in the programs. On the schedules the itemization of problems and plans was more carefully thought out than in former years.

Definite evidence of improvement in services stimulated through the use of the Evaluation Process is shown in the following extracts from 1947 schedules: From a Midwest city: "One year ago our *Evaluation* showed that 30 per cent of the cases of active tuberculosis were at home because they refused hospitalization or left against medical advice. As a means of solving this problem, a medical social worker was secured. This worker has acted as consultant to Health Department nurses and sanatorium superintendent, and has provided direct social service to patients at home, in hospital, and clinic. Now only 15 per cent of active cases are at home, and while 43 per cent of sanatorium discharges were against advice during the year, only 3 per cent left against advice from August 1 to December 15. The social worker is considered to be worth while and will be continued."

From a Southern city: "Attention was focused on the high death rate from diarrhea and enteritis on the 1945 *Evaluation Schedule*. The Health Officer held conferences with pediatricians, reviewed the deaths, and evolved plans for special emphasis on this type of illness. Special instructions were given visiting nurses on care and feeding of small children. There was not a single death from this cause in 1946."

Health Practice Indices—Data submitted on schedules from some 300 health departments for the years 1943, 1944, 1945, and 1946 will appear in chart form in the new edition of *Health Practice Indices* now in preparation. The inclusion of data for four years will give a wider spread of units reporting. Although its uses are many for health education purposes, not the least important is to convince governing bodies of the need for increased appropriations. It is less difficult to arouse an interest when citizens can be shown exactly where their community stands among 300 others. If it is high on the chart they want to keep it that way and if it is way down at the bottom, they want to know why.

The Evaluation Schedule—In order to keep the *Schedule* up-to-date with prevailing public health practices, it is necessary to revise it periodically. A

Committee on Revisions has been working on a new schedule for months, which will be ready in time for reporting 1947 activities. At present it is being tried out in various parts of the country and, from all reports, health department staffs, not only the health officers but the clerks and typists, find it a vast improvement over the last form. They say it is easier for a beginner to understand. They are also pleased to find that it does not demand excessive record changing. A *Guide* to the use of the new schedule has also been prepared and it will have a chapter on sampling methods which will make it easier to get information.

Institutes—Another regional institute on the Evaluation Process is planned, and will probably be held on the West Coast. It will follow the pattern of those held at the University of Michigan and North Carolina.

The Committee on Administrative Practice will welcome letters telling of uses that have been made of the evaluation material, as well as comments on the new publications.

Nominations for the Governing Council

In accordance with the By-laws of the Association, the Nominating Committee for Governing Council Members consisting of one Fellow elected by each Section and a Chairman appointed by the Executive Board, reports the following nominations for the Governing Council. The Chairman of the Committee is Earle G. Brown, M.D., Nassau County Commissioner of Health, Mineola, N. Y. The other members are: Frank C. Cady, D.D.S., Dental Health Section; Marietta Eichelberger, Ph.D., Food and Nutrition Section; Alexander G. Gilliam, M.D., Epidemiology Section; Arthur E. Gorman, Engineering Section; Lloyd M. Graves, M.D., Health Officers Section; Myrtle Greenfield, Laboratory Section; Howard W. Lundy, Dr. P. H., Public Health Education Section; Pearl McIver, R.N., Public Health Nursing Section; Hugo Muench, M.D., Vital Statistics Section; C. O. Sappington, M.D., Industrial Hygiene Section; John M. Saunders, M.D., Maternal and Child Health Section; David Van der Slice, M.D., School Health Section.

The By-laws provide that "upon the petition of twenty-five Fellows, the Nominating Committee shall add the name of any Fellow to the nominees selected by it, provided such petition is received not less than fifteen days before the Annual Meeting."

The terms of ten elective councilors will expire at the time of the Atlantic City Annual Meeting. The ten nominees receiving the highest number of votes on a written ballot cast by the Fellows present and voting at the Annual Meeting will be elected to fill the three year term expiring in 1950.

George Baehr, M.D.
New York Academy of Medicine
New York, N. Y.

Ernest Boyce, C.E.
University of Michigan
Ann Arbor, Mich.

Robert D. Defries, M.D.
University of Toronto
Toronto, Ont., Canada

Sarah S. Deitrick, M.D.
U. S. Children's Bureau
Washington, D. C.

C. Mayhew Derryberry, Ph.D.
U. S. Public Health Service
Washington, D. C.

Kenneth A. Easlick, D.D.S.
University of Michigan
Ann Arbor, Mich.

Marietta Eichelberger, Ph.D.
Evaporated Milk Association
Chicago, Ill.

W. Thurber Fales, Sc.D.
City Health Department
Baltimore, Md.

Thomas Francis, Jr., M.D.
University of Michigan
Ann Arbor, Mich.

Ruth Freeman, R.N.
American Red Cross
Washington, D. C.

Edna A. Gerken, C.P.H.
U. S. Indian Service
Chicago, Ill.

Wilton L. Halverson, M.D.
State Department of Public Health
San Francisco, Calif.

Robert H. Hutcheson, M.D.
State Department of Health
Nashville, Tenn.

Carl F. Jordan, M.D.
State Department of Health
Des Moines, Iowa

Edmund K. Kline, Dr. P. H.
Cattaraugus Co. Health Department
Olean, N. Y.

Joseph G. Molner, M.D.
City Department of Health
Detroit, Mich.

Roy J. Morton, M.S.
Vanderbilt University
Nashville, Tenn.

Joseph W. Mountin, M.D.
U. S. Public Health Service
Washington, D. C.

C. L. Outland, M.D.
Richmond Public Schools
Richmond, Va.

John J. Phair, M.D.
Louisville—Jefferson Co. Health Department
Louisville, Ky.

Frances C. Rothert, M.D.
State Board of Health
Little Rock, Ark.

Emilie G. Sargent, R.N.
Visiting Nurse Association
Detroit, Mich.

Fred W. Tanner, Ph.D.
University of Illinois
Urbana, Ill.

James G. Townsend, M.D.
National Institute of Health
Bethesda, Md.

Huntington Williams, M.D.
City Health Department
Baltimore, Md.

Robert E. Wodehouse, M.D.
Department of Pensions & National Health
Ottawa, Ont., Canada

SURVEY OF STATISTICAL PERSONNEL AND ACTIVITY

A survey of statistical activity and statistical personnel in public health agencies is currently being conducted under the joint auspices of the A.P.H.A. Vital Statistics Section and the U. S. Public Health Service. Questionnaires are being submitted to the chief executives and individual statistical workers in the state and the large city health departments. Valuable information on the following topics is being anticipated when the survey is completed:

1. Salary levels in the various classifications.
2. Factors which have motivated the men and women now engaged in public health statistics to seek these careers. This piece of information should throw light on the methods which might be used in the recruitment of statisticians.
3. Qualifications and duties of personnel now employed in statistical work in public health agencies. This information should prove important background material for the revision of the report on Educational Qualifications of Public Health Statisticians which is now under revision.
4. Need for in-service and other training programs.
5. Need for reorganization of statistical activities.
6. Degree of the prevailing personnel shortage and its effect on the quality and areas of service given.

It is hoped that a preliminary analysis

of the data will be ready to be presented at the Annual Meeting at Atlantic City.

DR. HOWARD M. KLINE RETURNS TO A.P.H.A. STAFF FROM LEAVE

Howard M. Kline, Ph.D., Bethesda, Md., who has served for the last year as Technical Secretary of the Subcommittee on Medical Care of the American Public Health Association, has returned to the staff of the Subcommittee after several months of service as a staff member of the President's Scientific Research Board of Washington. This Board was created by executive order for the purpose of inventorying all research activities in the United States, with special reference to the research being conducted within the federal establishment and that which is being conducted outside with federal funds. Dr. Kline directed the survey of medical research and conducted special studies incident thereto.

During Dr. Kline's leave the staff of the Subcommittee on Medical Care was guided by Milton Terris, M.D., M.P.H., Medical Associate of the Subcommittee, which is under the Chairmanship of Joseph W. Mountin, M.D.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Edward W. R. Best, M.D., D.P.H., North Okanagan Health Unit, Vernon, B.C., Canada, Director

John R. Bourne, M.D., Box 186, Roosevelt, Utah, City Physician

Thelma C. Buckthorpe, A.B., Box 538, Waynesville, Mo., Acting Health Officer, Pulaski Health Unit

Wilfred D. David, M.D., 7 Prairie Ave., Newport, R. I., Senior Asst. Surgeon (R), U. S. Public Health Service

William P. Doherty, V.M.D., 135 Broad St., Bridgeton, N. J., Health Officer

Milton Feig, M.D., M.P.H., 185 Thompson Shore Rd., Manhasset, N. Y., Fellow U. S. Public Health Service; with Nassau County Health Dept.

Morris Fiterman, M.D., M.P.H., 6152 Spruce St., Philadelphia 39, Pa., Medical Inspector, Philadelphia Health Bureau

Kenneth W. Haworth, M.D., M.P.H., 805 Sixth St., Eureka, Calif., Director, Humboldt County Health Dept.

Samuel L. Henke, M.D., 314 Grand Ave. E., Eau Claire, Wis., Member, State Board of Health

Michael Lipari, M.D., M.P.H., 34 South St., Middletown, N. Y., Asst. District Health Officer, State Dept. of Health

Irvin D. Litwack, M.D., 218 E. First St., Long Beach 2, Calif., Asst. Health Officer

Otto Lohman, M.D., 100 Barnard Rd., Manteno, Ill., Health Officer, Manteno State Hospital

Harold C. Miles, M.D., M.P.H., 602 Washington St., Olean, N. Y., Asst. Commissioner, Cattaraugus County Dept. of Health

W. O. B. Nelson, M.D., Fergus Falls, Minn., Health Officer

Forrester Raine, M.D., 425 E. Wisconsin Ave., Milwaukee, Wis., Member, State Board of Health

Harold E. Smith, M.D., Middlefield, Conn., Health Officer

Robert L. Smith, M.D., 513 N. Rampart St., New Orleans 16, La., Director, Bureau of Tuberculosis Control, City Health Dept.

Maurice L. Strait, B.S., City Health Dept., Hastings, Nebr., Director of Public Health

A. B. Tate, M.D., Court House, Russellville, Ark., Medical Director, District 9, State Board of Health

John H. Venable, M.D., P. O. Box 374, Dalton, Ga., Commissioner of Health, Dalton-Whitfield County Health Dept.

William F. Wagner, M.D., 401 N. Market, Paris, Tenn., Health Officer II, Tennessee Valley Authority

Tsu-Hsiang Wang, M.D., M.P.H., 7 Moling Chun, Moling Rd., Nanking, China, City Health Commissioner

David M. Wolfe, M.D., M.P.H., P. O. Box 127, Albany, Ga., Commissioner of Health, Dougherty County Health Dept.

Clarence E. Yount, M.D., Masonic Temple, Prescott, Ariz., City Health Officer

Laboratory Section

Emma Albert, B.S., 1700 W. Jackson, Chicago,

Ill., Bacteriologist, State Dept. of Public Health

Hazel Current, B.S., 918–17th St., Santa Monica, Calif., Hospital Laboratory Worker

Walter F. Heintzelman, M.A., State Department of Health, Harrisburg, Pa., Chief, Division of Biologicals and Supplies

Enrique Marrero y Vela, D.V.M., Laboratorio Ont. Ayestaran 196, Havana, Cuba, Bacteriologist

Mary J. McClintock, B.S., Rt. 8, Box 440, Oklahoma City 9, Okla., Bacteriologist, State Dept. of Health

Dr. Ludlow R. Stevens, 4712 Leiper St., Apt. E-2, Philadelphia 24, Pa., Research Work in Hematology and Bacteriology

Morris R. Shub, B.S., 3905 Eldorado Ave., Baltimore 15, Md., Bacteriologist, Strasburger & Siegel

Stanley Villafranca, M.S., Sanatorio "Carlos Duran," Cartago, Costa Rica, C.A., Head of Laboratory

Vital Statistics Section

Campbell R. Graf, B.A., 2305 Neil Ave., Columbus 1, Ohio, Statistician, State Dept. of Health

E. C. Jenkins, City Hall, St. Joseph, Mo., Clerk, Board of Health

Goldy D. Kleinman, A.M., 2407 Ocean Front, Santa Monica, Calif., Junior Public Health Analyst, State Dept. of Public Health

B. Aubrey Schneider, Sc.D., American Cancer Soc., 47 Beaver St., New York 4, N. Y., Asst. Director, Dept. of Statistics and Special Services

Clarence A. Burlage, 1437 Xanthia, Denver 7, Colo., Milk Sanitarian, City Health Dept.

Emory J. Cook, Lakemont Dr., Augusta, Ga., Sanitarian, Richmond County Dept. of Health

Rolf Eliassen, Sc.D., New York Univ., University Heights, New York 53, N. Y., Professor of Sanitary Engineering, College of Engineering

John R. Fleming, B.A., Van Buren County Health Dept., Paw Paw, Mich., Sanitarian

Francis R. Girard, State Dept. of Public Health, Fernald Hall, Amherst, Mass., Sanitary Technician

Warren P. S. Hall, D.V.M., M.A., 9 Ontario St., Toledo 12, Ohio, Supt. of Food and Sanitation, City Health Dept.

Robert M. Kennedy, A.B., 604 Mission St., San Francisco 5, Calif., Assoc. Engineer, Engineering Office of Clyde C. Kennedy

Hoyt R. Mason, 70 Fisher Rd., Rochester 11, N. Y., Assistant Sanitary Inspector, Monroe County Dept. of Sanitation

R. Kay Matthews, City Hall, Hugo, Okla., Sanitarian, Choctaw-McCurtain County Health Dept.

Robert L. Prichard, C.E., 5229 Greenwood Ave., Chicago, Ill., Sanitary Engineer (R), U. S. Public Health Service

Rodrigo Puente, C.E., 105 Tejadillo, Cartageno, Colombia, S.A., Sanitary Engineering Student, Univ. of North Carolina

Walter M. Scott, 3155 W. 40th Ave., Denver, Colo., Chief Health Inspector, City Health Dept.

Henry B. Starr, Jr., 701 Persons Bldg., Macon, Ga., Public Health Sanitarian, State Dept. of Public Health

Fred W. Thomas, C.E., Tennessee Valley Authority, Wilson Dam, Ala., Senior Sanitary Engineer

Williams L. Timmons, 1215 H. St., Eureka, Calif., Sanitarian, Humboldt County Health Dept.

C. William Tresslar, 114 Greenwood St., La-Habra, Calif., Sanitarian, Orange County Health Dept.

Frank L. Woodward, B.E., 5821 Elliot Ave., S., Minneapolis 7, Minn., Director, Division of General Sanitation, State Dept. of Health

Industrial Hygiene Section

Edward R. Hawkins, M.D., 472 Union Ave., Elizabeth 3, N. J., Asst. Plant Physician, Standard Oil Co. of New Jersey

Gordon W. Petersen, M.D., Supt., Medical Labs., Kimberly Clark Corp., Neenah, Wis.

Ada Chree Reid, M.D., 1 Madison Ave., New York, N. Y., Physician in Charge, Tuberculosis Control Program, Metropolitan Life Insurance Co.

Herbert E. Tomlinson, M.D., 905 Smith Tower, Seattle, Wash., Industrial Medical Consultant, State Dept. of Health

Food and Nutrition Section

Virginia L. Daly, B.S., R.D. 2, Box 627, Clayton 5, Mo., Staff Member, Dairy Council of St. Louis

Doris P. Longman, M.S., 175 Jay St., Albany 6, N. Y., Nutritionist, State Dept. of Health

Maternal and Child Health

Marcella A. Gawronski, R.N., M.A., 402 Bella Vista, Pasadena 8, Calif., Maternal and Child Health Nursing Consultant, State Dept. of Public Health

A. W. Kuts-Cheraux, M.D., Dr. P.H., 24 Main St., Bisbee, Ariz., General Practice, Cheraux Clinic

Hannah D. Mitchell, B.S., State Health Department, Atlanta 3, Ga., Maternal and Child Health Consultant

Public Health Education Section

Isabel C. Bell, A.B., 1551 Franklin Ave., Mineola, N. Y., Director of Education, Nassaw County Cancer Committee

Ralph H. Boatman, Jr., B.Ed., 917 Mayo St., Carlinville, Ill., Student, School of Public Health, Univ. of North Carolina

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Dean Halliday, 1900 Euclid Ave., Cleveland, Ohio, Public Relations Director, Anti-Tuberculosis League and Univ. Hospitals

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Marian V. Hester, A.B., 439 New England Bldg., Topeka, Kans., State Home Management Specialist, Farms Home Administration

Margaret C. Joyce, R.N., B.S., Rm. 924, County Office Bldg., White Plains, N. Y., Acting Exec. Director, Westchester Tuberculosis and Public Health Assn.

Clara L. Lankford, M.S.P.H., 204 Second St., Natchitoches, La., Health Educator, State Board of Health

Mrs. Marty Mann, 2 East 103 St., New York 29, N. Y., Exec. Director, National Committee for Education on Alcoholism

Jane C. McCoy, M.S.P.H., Wilson County Health Department, Wilson, N. C., Health Educator

Rufus R. Rosell, B.M.E., 496 Lowry Medical Arts Bldg., St. Paul 2, Minn., Exec. Sec., Minnesota State Medical Assn.

Amy E. Williamson, M.S., 303 Ninth Ave., New York 1, N. Y., Exec. Sec., Lower West Side District Health Committee

Public Health Nursing Section

Effie S. Andrus, R.N., 116 South State St., Springfield, Ill., Supervising Nurse, Division of Maternal and Child Hygiene, State Dept. of Public Health

Ruth Botts, Coldwater, Kans., Public Health Nurse, State Board of Health

Frances K. Crouch, 125 Mt. Vernon St., Ridgefield Park, N. J., Deputy Director, Nursing Service, North Atlantic Area, American Red Cross

Ann Haegele, R.N., 532 Federal Courts Bldg., St. Paul 2, Minn., District Nurse, Midwestern Agricultural Workers Health Assn.

Jeanette S. Jackson, 9 Seabury St., Newark, N. J., Student, Univ. of Pennsylvania

Rella H. Maxwell, 68 Jamestown St., Randolph, N. Y., Staff Nurse, Cattaraugus County Dept. of Health

Helen G. McArthur, M.A., 95 Wellesley St., Toronto, Ont., Canada, Director of Nursing Services, Canadian Red Cross Society

Myrtle A. Alson, R.N., 528 S. 8th St., La Crosse, Wis., Supervisor of Nurses, City Health Dept.

Jeannette E. Potter, B.S., 714 N. 10th St., Tacoma 3, Wash., Educational Director, Tacoma Public Health Nursing Assn.

Joyce E. Thompson, B.S., 638 S. Weller, Springfield, Mo., Junior Public Health Nurse, Greene County Health Dept.

Patricia L. Traver, R.N., Box 22, Rhinebeck, N. Y., Exec. Director, Northern Dutchess Community Nursing Service

Mary F. Ward, R.N., M.A., P. O. Box 925, Athens, Ga., Asst. Professor of Nursing Education, Univ. of Georgia

Ethel A. Wilkins, R.N., 209 S. High School, Columbus, Kans., Cherokee County Health Nurse

Epidemiology Section

Merle Bundy, M.D., M.P.H., 3757 N. Bancroft, Indianapolis, Ind., Acting Director, Division of Tuberculosis Control, State Board of Health

Coleman D. Caplovitz, M.D., St. Louis City Hospital, St. Louis 4, Mo., Intern

Charles Hillenbrand, M.D., M.S., Warren Clinic, Warren Bldg., Michigan City, Ind.

Lt. Col. Irvine H. Marshall, M.C., Hq. 4th Army, Medical Section, Fort Sam Houston, Tex., Chief, Physical Standards

Milton S. Parker, A.B., Hampton Roads Medical Center, P. O. Box 749, Norfolk 1, Va., Research Investigator, Venereal Disease Division, U. S. Public Health Service

George W. Weber, M.D., Ulster County Tuberculosis Hospital, Kingston, N. Y., Medical Director

School Health Section

Norma C. Beckman, R.N., B.S., 3058 N. 51st St., Milwaukee, Wis., Instructor in Public Health Nursing, Marquette Univ.

Virginia J. Cook, B.S., 902 Chapel St., Rm. 615, New Haven, Conn., Asst. Exec., New Haven Tuberculosis and Health Assn.

Ruth E. Cowles, A.B., 1426 Woodrow Ave., Wichita 3, Kans., School Nurse, Board of Education

John C. Danahy, M.D., 216 East Ninth St., Cincinnati 2, Ohio, Director, Division of

Health and Hygiene, Cincinnati Public Schools

Ciwa Griffiths, M.S., 4761 Date Ave., Apt. 1, La Mesa, Calif, Specialist in Speech and Hearing, San Diego County Schools

Helen N. Tarbox, R.N., 243 Winthrop St., Winthrop, Mass., Health Supervisor, School Dept.

Dental Health Section

J. W. Owen, D.D.S., First National Bank, Lexington, Ky., Dental Director, State Health Dept.

Samuel Plotnick, D.D.S., M.P.H., 1106 Morris Ave., Bronx 56, N. Y., Dentist, St. John's Guild

Unaffiliated

Jerome Beller, D.V.M., 1914–66 St., Brooklyn 4, N. Y., Consultant Veterinarian, U.N.R.R.A.

Thomas D. Fridena, M.D., 717 N. Sixth, Tucson, Ariz., Gynecologist

Ralph F. Vaccare, M.P.H., Assn. of American Railroads, 1103 W. Pratt St., Baltimore 23, Md., Bacteriologist, Sanitation Research Project

Major William L. Vogt, M.C., Manhattan Eng. Dist., Oak Ridge, Tenn.

Marceil Young, 8161 N. Druid Ave., Portland 3, Ore., Exec. Secy., Agricultural Workers Health Assn.

The following footnote to the article by Dr. Edward S. Rogers, which appears on page 1017, was received too late to be inserted in its proper place. We are, therefore, taking this means of presenting the names of the members of the Committee.

U. S. Subcommittee of the International Conference for Revision of the *International List of Causes of Death:*

George Baehr, M.D.
Mount Sinai Hospital
New York, N. Y.

F. S. Burke, M.D.
Department of Health and Welfare
Ottawa, Ont., Canada

Selwyn D. Collins, Ph.D.
(member of working subcommittee)
U. S. Public Health Service
Bethesda, Md.

Edwin L. Crosby, M.D.
The Johns Hopkins Hospital
Baltimore, Md.

Halbert L. Dunn, M.D.
(member of working subcommittee)
U. S. Bureau of the Census
Washington, D. C.

W. Thurber Fales, Sc.D.
(member of working subcommittee)
City Health Department
Baltimore, Md.

J. T. Marshall
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J. C. Meakins, M.D.
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Lowell J. Reed, Ph.D., Sc.D.
The Johns Hopkins University
Baltimore, Md.

Edward S. Rogers, M.D.
University of California
Berkeley, Calif.

J. Wyllie, M.D.
Queen's University
Kingston, Ont., Canada

Consultants to Committee:

Percy Stocks, M.D.
(member of working subcommittee)
General Register Office
London, England

Yves M. Biraud, M.D.
(member of working subcommittee)
League of Nations
Geneva, Switzerland

A. H. T. Robb-Smith, M.D.
(member of working subcommittee)
Oxford, England

Iwao M. Moriyama, Ph.D.
(member of working subcommittee)
U. S. Bureau of the Census
Washington, D. C.

Winifred O'Brien, R.N.
(member of working subcommittee)
Dominion Bureau of Statistics
Ottawa, Ont., Canada

EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

Positions Available

(Supplemental to list in July Journal)

Public Health Commissioner in Tuscarawas County, New Philadelphia, Ohio. Must have degree in Public Health. To serve in a county with a population of approximately 40,000. Beginning salary $6,000 or more. Write **Box C-2,** Employment Service, A.P.H.A.

Health Officer: salary $6,000. Requirements: Graduation from medical school of recognized standing, three years' practice of medicine, graduate of recognized school of public health with at least one year's attendance. Full-time position. City of 27,000. Apply Board of Health, Middletown, Conn.

Public Health Engineering Laboratory in Central States region has opening for **Sewage and Wastes graduate chemist,** 3 years' experience expected, preferably in similar laboratory work. Position requires some field investigations. Salary range $230–$290. Write **Box B-2,** Employment Service, A.P.H.A.

Public Health Nurses. (1) Two positions for experienced nurses (beginning salary $2,400, must furnish automobiles, mileage allowance). (2) Two junior grade positions, (beginning salary $2,100, mileage allowance). Full-time health unit including six counties in picturesque rural Badlands area. Generalized program. Write Mary E. Soules, M.D., District Health Officer, Southwestern Health Unit, New England, N. D.

Associate Bacteriologist, College degree, one year training in public health laboratory, two years' experience. Five day week. Salary $2,750. Write William A. Dorsey, Laboratory Director, Arlington County Laboratory, P. O. Box 151, Arlington, Va.

Sanitary Chemist or Engineer for staff position in engineering school, southeast. To do research work (methods of water and sewage analysis) which can be applied toward advanced degree; also will have to carry some undergraduate teaching. Write **Box E-512,** Employment Service, A.P.H.A.

Director of Public Health Nursing for Columbia County Dept. of Health. Apply: Columbia County Dept. of Health, 612 Warren Street, Hudson, N. Y.

Health Officers (M.D.) for several important city-county and other local health department openings in West Virginia. Some of the positions carry teaching responsibilities, implementing the basic salary of $6,000. Physicians are encouraged to apply even if lacking public health training or experience; must be below 35 years at first public health appointment. Write Bureau of County Health Work, West Virginia Dept. of Health, Charleston, W. Va.

Specialized Consultant Nurses in the following programs—Tuberculosis, Maternal and Child Health, School Health Service. Requirements include bachelors degree with major in public health nursing, advanced preparation in the specialty and one year of experience in generalized supervision. Travel allowance. Salary open. Write Director, Division of Public Health Nursing, State Board of Health, Jackson, Miss.

Negro M.D.—Assistant Director School Health Service in Nashville, Tenn. Public Health experience desirable but not absolutely necessary. Staff of three doctors and twelve nurses doing broad school health program in metropolitan area. Chance to affiliate with Meharry Medical School. Salary open, 12 months. Eligible for Civil Service if under 40. Communicate Director School Health Service, Nashville, Tenn.

Health Officer wanted, September through June to substitute while on educational leave. Illinois County of 35,000, 100 miles from Chicago. Salary $515 per month plus $60 month's travel. Two weeks sick leave and three week vacation leave provided, annually. Lee County Health Department, 123 East First Street, Dixon, Ill.

Experienced, trained man for Public **Health Executive** position in San Mateo

County, California. Starting salary $7,788 per year, increasing annually over four years to $9,732. Write Civil Service Commission, Courthouse, Redwood City, Calif.

Industrial **Hygiene Chemist,** five years' experience. Graduate of accredited college with major in chemistry. Salary $325–$425 per month, plus travel expenses. State Civil Service position with vacation, sick leave, and retirement privileges. Send brief outline with request for application form to State Health Officer, Louisiana State Department of Health, New Orleans 7, La.

Public **Health Nurses** in official generalized program of Washtenaw County, Michigan, at Ann Arbor. Agency is field teaching center for University of Michigan. Opportunity to study at University.

Health **Officers and Physicians** wanted: Pinellas County (St. Petersburg, Clearwater), man with public health experience, training, beginning salary $7,200; Leon County (Tallahassee), beginning salary $6,000; several counties open shortly. Younger men preferred; persons must be below 45 when entering public health for first time. Also tuberculosis and venereal disease clinicians, psychiatrists, general medical men needed for State Board of Health, County Health Units and State institutions. Beginning salaries range from $5,000 to $6,000. Younger men preferred. Write or wire Supervisor, Florida Merit System, P. O. Box 1136, Tallahassee, Fla.

Chief of Division of Maternal and Child Health in new industrial community. Salary $6,000 plus car for official business. Forty-four hour week, annual and sick leave. Housing available at reasonable cost. Write **Box G-2,** Employment Service, A.P.H.A.

Health Officer, Midwestern city of approximately 75,000. Should have training in public health work or be willing to take such training. For information write to **Box F-2,** Employment Service, A.P.H.A.

Trained and experienced Health Officer for new Quadri-County Health Department; population 41,000; Midwest; mostly agricultural. Salary $7,200 plus travel. Write **Box E-2,** Employment Service, A.P.H.A.

Public **Health Nurse** to inaugurate a visiting nursing service for the Santa Maria Valley Chapter of the American Red Cross. Experienced person desired. Minimum salary $3,000. Car furnished. Write qualifications to **Mrs. Chester M.** Langenbeck, 602 E. Main Street, Santa Maria, Calif.

Public Health Nurse for tuberculin testing demonstrations—a lend-lease project with county tuberculosis associations. Nurse to give and read Mantoux tests, be capable of supervising or conducting preeducational work and community organization. Must have car. Salary $3,000 to $3,600 annually, plus living and travel expenses. Write **Box D-2,** Employment Service, A.P.H.A.

City Health Officer to serve industrial city of 20,000 population on full-time basis; opportunity to develop school medical and child health services in coöperation with community agencies. Reply in detail to Board of Health, City Hall, North Adams, Mass.

Physician experienced in tuberculosis for position of Assistant Director of Tuberculosis Control in city-county health department of midwest community; $4,500 with full maintenance. Write **Box A-3,** Employment Service, A.P.H.A.

Supervising Public Health Nurse: in Marin County Health Department for an expected vacancy. California registration and P.H.N. Certificate required; qualifications comparable to either those of the California State Health Department or preferably to those of the A.P.H.A. Generalized program with six staff nurses in semi-rural county immediately north of San Francisco. Mileage supplied on private car at 8¢ per mile. Expected starting salary $250. Write Miss Elizabeth Newell, Supervising Nurse, Marin County Health Department, 704–4th Street, San Rafael, Calif.

Director of Public Health Nurses: same agencies and comparable qualifications; a new position expected to be created at $300 per month beginning salary. Write: Irving D. Johnson, M.D., Marin County Health Officer, Marin County Health Department, 704–4th Street, San Rafael, Calif.

Industrial Hygiene Physician. Minimum of three years medical experience with major emphasis in the field of Industrial Hygiene, supplemented by one year postgraduate training in a school of public health with studies in Industrial and Occupational disease control. Salary range: $6,000 to $7,200. Start exceptionally well qualified person at $6,480. Under Civil Service and Retirement. Apply to: Mr. A. T. Johnson, Personnel Director, Oregon State Board of Health, 1022 S.W. 11th Avenue, Portland 5, Ore.

Associate Bacteriologist in charge of clinical laboratory in Eastern State Health Department. B.S. degree plus three years' experience, thorough foundation in chem-

istry and background in bacteriology are requisites. New position with teaching duties. Beginning salary $3,600, annual increments. Write **Box I-3,** Employment Service, A.P.H.A.

Bacteriologist for Director of Laboratory, State Health Department. Ph.D. required. Background in serology, clinical bacteriology, and public health necessary. Salary range $4,560–$5,460. Write **Box B-3,** Employment Service, A.P.H.A.

Public Health Nurse—In Out-patient department, for follow-up work and supervision of clinic. Secretary; station wagon furnished. Salary $175 per month and full maintenance. Ideal working and living conditions. Must be between ages of 22 and 45. Contact Paul D. Crimm, M.D., Boehne Tuberculosis Hospital, Evansville 12, Ind.

Several Qualified Public Health Officers in Texas. Salary range $5,500 to $7,500 per year plus travel allowance. Apply to: Dr. Geo. W. Cox, State Health Officer, Austin, Tex.

Physical Therapists and Senior Physical Therapists for State Health Deparment. Physical therapists must be graduates from a school of physical therapy approved by the A.M.A. and registered in the American Registry of physical therapists. Salary $220–$260 per month. Senior positions require two years' experience. Salary $250–$300 per month. Write Merit System Supervisor, State Personnel Board, Seattle 4, Wash.

Health Officer for Saint Joseph, Mo. Graduation in medicine from a grade A medical school and not less than two years of full-time experience in public health work, or, one year of such full-time experience and the completion of a course in public health of not less than one year in residence at a recognized institution of learning required. Write E. C. Jenkins, Clerk, Board of Health, Saint Joseph, Mo.

Public Health Nurse for generalized Public Health Program. Salary to start $2,500. Must register in Connecticut. City of 40,000 people. Five Parochial Schools included in work. Dependability a necessity. Retirement Fund. Must drive car. Apply: Health Officer, 47 Main Street, Bristol, Conn. Give qualifications and experience.

Two Public Health Nurses for growing Health Department in southeastern Michigan. Opportunity to work under supervision. Also opportunity for some postgraduate training at nearby School of Public Health. Must have completed one year in recognized school of Public Health. Salary range $2,400–$2,600, plus travel. Write H. C. Huntley, M.D., Director, Lenawee County Health Department, Adrian, Mich.

Director of Industrial Hygiene in West Virginia State Department of Health, Charleston. Salary $6,000 plus travel. Position under state merit system. Qualifications: M.D. with two years' full-time professional experience in the field of industrial hygiene. Must be eligible for West Virginia license. Write Dr. N. H. Dyer, State Health Commissioner, State Department of Health, Charleston 5, W. Va.

County Health Officers in the West Virginia State Department of Health. Salaries from $4,440 to $6,000 per annum, plus travel allowance, depending on training and experience. Position under state merit system. Qualifications: M.D. with at least two years of full-time professional experience in the field of public health. Must be eligible for West Virginia license. Write Dr. N. H. Dyer, State Health Commissioner, State Department of Health, Charleston 5, W. Va.

Health Officer for newly established Bi-County Health Department in Central Illinois. Combined population approximately 33,000, mostly agricultural. Staff of eight contemplated. Trained and experienced physician wanted to fill the position. Excellent public support. Salary $7,200 plus travel. Write: Mr. E. R. Rinehart, Secretary, DeWitt-Piatt County Board of Health, Farmer City, Ill.

City Biochemist. $400 to $500 per month plus $48.96 cost-of-living. Two years' practical experience directing biological laboratory or comparable experience; postgraduate training equivalent to M.A. and preferably Ph.D. in one of the sanitary sciences. Applications received until needs of service filled. Write Personnel Department, City Hall, Madison 3, Wis.

District Health Officers for the State of Washington. Requirements: Graduation from an approved medical school, 1 year interneship and 3 years in professional medical work; or 1 year in professional medical work and 1 year's study in school of public health. Salary $6,000 to $7,140. Exceptional candidates can start above the minimum level. Write State Personnel Board, Washington State Dept. of Health, Smith Tower, Seattle 4, Wash.

Two **Public Health Nurses** to teach in midwestern university. One responsible for certificate level program. One to develop program of study for graduate

nurses preparing to integrate social and health aspects in basic schools of nursing. Must have Master's degree and a good combination of public health nursing experiences including supervision. Preference given to those with teaching experience. Beginning salary $4,000 for ten month contract. Write **Box N-398**, Employment Service, A.P.H.A.

Director **of Nutrition** for Red Cross Chapter in a midwestern metropolitan center. Candidate must have sound nutrition background and experience in community activity. Excellent opportunity to develop a broad program on a long-term basis with coöperation from health, education, social welfare, and business leaders. Salary open. Write **Box E-3**, Employment Service, A.P.H.A.

Public **Health Nurses** are needed in Georgia. The State and County Departments of Public Health in Georgia invite qualified public health nurses to apply for permanent positions in Georgia. Staff nurses must have a minimum of six months' postgraduate public health nursing education in addition to acceptable basic training. Salaries Range from $2,100 to $2,340 in addition to a liberal travel allowance. Supervisory nurses must have at least two years' experience in public health nursing as well as one academic year of postgraduate training in public health nursing. Salaries range from $2,400 to $3,000 in addition to travel allowances. Scholarships are available for graduate nurses who are interested in receiving public health nursing training. Write Personnel Administrator, State Health Department, Office Building, Atlanta, Ga., for application forms and full details.

Graduate in Bacteriology with some background in chemistry and experience in field of sewage and water research or treatment. To take charge of section in newly organized research project. Eastern United States. Salary $3,200–$4,200 depending upon qualifications. Write **Box L-535**, Employment Service, A.P.H.A.

Sanitarian with experience in food handling and restaurant sanitation. Age 25 to 40 preferred. Health department experience necessary. Starting salary $3,000 plus ample travel allowance. Must be well educated and diplomatic. State education, experience, and age in reply. Must have own car. State of Wyoming. Write State Health Officer, Cheyenne, Wyo.

School Physician for school district with a school population of more than 10,000. To take complete charge of the elementary program. Salary approximately $6,000. West Coast. Write **Box D-3**, Employment Service, A.P.H.A.

1. **Sanitary Engineer** with training and experience. Maximum salary $4,200. 2. **Sanitarian** with experience in food and milk control, salary up to $3,000, for County Health Department, Southeast. County seat in large urban center. Write **Box E-516**, Employment Service, A.P.H.A.

Physician with experience or training in public health for Director of county health unit; headquarters in Bisbee, Ariz.; population 39,000; salary dependent upon training and experience; liberal flat rate for travel allowance. Apply Chochise County Health Service, Box 1193, Bisbee, Ariz.

Health Officers: Positions are open in Georgia for county and district commissioners of health. Salaries for experienced public health physicians range from $6,600 to $7,500. Salaries for physicians with public health training who are entering the field range from $5,640 to $6,840. Liberal travel allowances supplement these salaries. Tenure of office is assured by a merit system. License to practise medicine in Georgia is required. Ample opportunities for training are offered with liberal stipend while in training. Write T. F. Abercrombie, M.D., Director, State Health Department, State Office Building, Atlanta 3, Ga., for application forms and full details.

POSITIONS WANTED

Health Agency Executive desires position as Director of Health Council or Voluntary Agency. Excellent experience in health interpretation. Community organization and coördination. Wishes permanent residence West Coast or Southwest. Write **Box A-527**, Employment Service, A.P.H.A.

Bacteriologist, Ph.D., 29, Yale, Academic, industrial and medical research experience. Background in biochemistry, immunology and parasitology. In charge of U. S. Government laboratories, food and water control, health programs (malariology), mass immunization, etc., in several foreign countries (including tropics) during war years. Training in statistics, pharmacology, pathology. Write **Box L-531**, Employment Service, A.P.H.A.

Former Sanitary Engineer (RC) Public Health Service, long experience, now em-

ployed, desires position sanitary engineer or director sanitation with municipal or local health unit. Write **Box E-514,** Employment Service, A.P.H.A.

Graduate Social Worker. Degree in Community Organization. Experience: public relations and interpretation for health agency; intake worker. Committee work. Some case work with patients; also health education. Good at programming. Negro. Write **Box M-502,** Employment Service, A.P.H.A.

Position as **Educational Research Worker** in public health and/or community educator with special reference to planning and organizing programs in sanitation and other phases of public health. Trained in education, social work and public health, with doctorate in latter field. Writing experience with public health agencies in preparing copy for newspaper and other publications; several years of field experience in sanitation. Position in West or Midwest preferred. Write **Box C-3,** Employment Service, A.P.H.A.

Parasitologist, male, 28 years old, B.S., some graduate training. Six years' experience in the field of parasitology in civilian governmental agency, army, university and industrial laboratory. Experience includes routine examinations, field work and research in parasitology and some serology. Write **Box L-533,** Employment Service, A.P.H.A.

Recent Graduate Veterinarian (KSC '47) desires employment. Have had experience working for the Health Department of the District of Columbia. Age 32, married, no children. Write **Box 304,** Employment Service, A.P.H.A.

Advertisement

Opportunities Available

WANTED—(a) Obstetrical consultant, tuberculosis consultant and, also, two district public health officers; headquarters in large city of Pacific Coast; salaries dependent upon qualifications, $5,520–$7,140. (b) Two physicians, man and woman, to join staff, university health service; enrollment of 18,000; teaching appointments if desired. (c) Chief of division of maternal and child hygiene; town of 45,000; new home available; $6,000 including car and expenses. (d) City commissioner; town of 50,000; Middle West. **PH8-1** Medical Bureau (Burneice Larson, Director), Palmolive Building, Chicago 11.

WANTED—(a) Health educator to serve as consultant; preferably one with minimum Master's degree and three years' experience; $3,600–$4,800; West. (b) Sanitary engineer; degree in sanitary or public health engineering required; full-time teaching, university school of public health; West. (c) Health educator; county tuberculosis association; town of 100,000; Middle West. **PH8-2** Medical Bureau (Burneice Larson, Director), Palmolive Building, Chicago 11.

WANTED—(a) Two public health nurses for faculty appointments; middle western university; ranks dependent upon qualifications; 10 month year; $4,000–$5,000. (b) School nurse; duties include counseling of girls; high school of small town adjoining Chicago; $2,400–$3,700 for nine month year. (c) Executive director; educational program for staff members; nonofficial agency having generalized nursing program; East. (d) Industrial nurse; plant having 1,000 employees; Middle West. (e) Several public health nurses; one should be interested in supervising; knowledge of Spanish required. **PH8-3** Medical Bureau (Burneice Larson, Director), Palmolive Building, Chicago 11.

Advertisement

Opportunities Wanted

Public health physician; B.S., M.D., Middle Western schools; M.P.H., Johns Hopkins; eight years administrative experience in public health and industrial health; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Young dentist, D.D.S. University of Pennsylvania; four years on staff of department of dentistry of large hospital; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Health Educator; B.S., Sanitary Engineering; Master's in Public Health Education; three years, sanitary engineer, municipal department of health; four years, health educator, state health department; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Public health nurse seeks administrative appointment; B.S., M.A. degrees; eight years' public health experience including five as educational director, public health program; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

NEWS FROM THE FIELD

U. S. PRESIDENT'S 1947 HEALTH MESSAGE

On May 19, the President of the United States transmitted to Congress a message recommending the development and enactment of national health and disability insurance programs. He summarized the outlines of a long-range health program as presented in his earlier health message of 1945. Such a program, he declared, must include:

1. Adequate public health services, including an expanded maternal and child health program
2. Additional medical research and medical education
3. More hospitals and more doctors in all areas of the country where they are needed
4. Insurance against the costs of medical care
5. Protection against the loss of earnings during illness

In making a plan for adequate medical and dental care for children, for early care of illness now often delayed because of the high cost of medical care, for the better distribution of doctors, dentists, and hospital facilities, the President said "A national health-insurance program is a logical extension of the present social security system which is so firmly entrenched in our American democracy. Of the four basic risks to the security of working people and their families—unemployment, old age, death, and sickness—we have provided some insurance protection against three. Protection against the fourth—sickness—is the major missing element in our national social-insurance program."

On May 20, Senators Murray, Wagner, Pepper, Chavez, McGrath, and Taylor introduced Senate Bill 1320 designed to carry out the purposes stated in the President's message. This bill follows very closely the Wagner-Murray-Dingell bill of last year's Congressional Session but strengthens the provisions guarding against federal control. In the new bill, administration is vested in a National Health Insurance Board rather than in the single person of the Surgeon General of the U. S. Public Health Service. It also provides for a national Medical Advisory Council.

The bill provides for a national insurance system of prepaid personal health services with decentralized administration to be carried out by state and local agencies, authorizes federal grants-in-aid to pay premiums for those unable to pay premiums out of their own earnings, for the establishment of community-wide public health and maternal and child health services, and for medical research or professional education relating to the prevention of disease and disability. It covers all employed and self-employed, including domestic and agricultural workers now largely excluded from the benefits of the Social Security Act.

DR. HILLEBOE, NEW YORK STATE HEALTH COMMISSIONER

On July 1, 1947, Governor Dewey of New York announced the appointment of Herman E. Hilleboe, M.D., as New York State Health Commissioner. He was previously assistant Surgeon General and Associate Chief of the Bureau of State Services of the U. S. Public Health Service. Since 1942, he has been in charge of tuberculosis control activities of the Service.

Dr. Hilleboe received the degree of Doctor of Medicine from the University of Minnesota Medical School; had graduate training in pediatrics at the University Hospitals, and received the

Master of Public Health degree from the Johns Hopkins School of Hygiene and Public Health.

Shortly after assuming office, Dr. Hilleboe left for a three week tour of Europe to study health and tuberculosis problems on the continent and to attend three international meetings. He attended the meeting in Paris July 27 and 28 of the International Union Against Tuberculosis as one of the five American delegates representing the National Tuberculosis Association. He was the American delegate on the four-man Expert Committee on Tuberculosis of the World Health Organization's Interim Commission, and attended a meeting in Paris with the Danish, English, and Russian members of this Expert Committee. He was also the American representative of the U. S. Public Health Service at the International Congress on Microbiology in Copenhagen, July 17–18.

Dr. Hilleboe is a member of the following scientific societies: American College of Chest Physicians, American Epidemiological Society, American Medical Association, American Public Health Association, of which he is a Fellow, American Statistical Association, American Trudeau Society, Mexican Society Against Tuberculosis, National Tuberculosis Association, and the Tuberculosis Association of India.

Dr. Hilleboe has over 60 publications in the medical and public health literature published from 1931 to 1947. He is co-author with Dr. Russell H. Morgan, Professor of Radiology at Johns Hopkins Medical School, of the book, *Mass Radiography of the Chest,* published in 1945.

Dr. Hilleboe has returned to the United States and is now in active charge at the New York State Health Department. Among the programs which have been set for this department is the elimination of tuberculosis in the state within the next 25 years.

NEW JERSEY'S STATE HEALTH DEPARTMENT REORGANIZATION

Both the Assembly and Senate of New Jersey passed the State Health Department Reorganization Bill by large majorities. It provides for a State Health Department and a Commissioner charged with the duty of formulating comprehensive policies for the promotion of public health and the prevention of disease within the state. It provides also for a Public Health Council with power to make sanitary regulations. The Commissioner is empowered to establish, with the approval of the Public Health Council, such health districts as may seem necessary.

The Public Health Council under the new law prescribes the qualifications of health officers and sanitary inspectors for local health departments. No medical qualification for health officers is written into the law.

Although included in the bill as introduced, the Act as passed does not require a public health degree or at least a year of graduate study in public health as a qualification of the state health commissioner.

A county health department bill, also introduced into the recent legislature, failed to reach the floor of either house.

The members of the new Health Council who have been appointed for terms of from one to seven years respectively are as follows:

Harvey N. Davis, Sc.D., President, Stevens Institute of Technology
Wheeler McMillen, Editor, *Farm Journal*
Frederick P. Lee, M.D., Health Officer, Paterson
Walter G. Alexander, M.D., former State Board of Health member, and practising physician
Marcus W. Newcomb, M.D., practising physician
Florence M. Farr, lay member of New Jersey State Organization for Public Health Nursing and other nursing and health organizations
Henry N. Lendall, Professor of Municipal and Sanitary Engineering, Rutgers University

NATIONAL CANCER INSTITUTE OF CANADA CREATED

To coördinate all efforts in cancer control in Canada on a national basis, the Minister of the National Health and Welfare called a conference of representatives from all organizations working in the cancer field in Canada, as a result of which the National Cancer Institute of Canada was organized. It will (1) provide for the education and subsistence of cancer research workers; (2) provide undergraduate and postgraduate education for physicians, and attempt to establish a uniform system of reporting cancer cases and deaths throughout the Dominion; (3) continue the lay educational program now being conducted by the Canadian Cancer Society; and (4) raise funds to support the work of the institute.

Dr. Allan W. Blair, Regina, Sask., was recently appointed Managing Director. The first project planned by the institute is an immediate survey of all cancer facilities for diagnosis, treatment, and research in Canada.

STATE AID FOR LOCAL HEALTH DISTRICTS IN CONNECTICUT

Under the headline, "A Milestone in Connecticut Public Health Program," the Connecticut State Department of Health *Weekly Bulletin* reports the passage on June 4 of House Bill 175 by the State's General Assembly. A similar bill had been defeated in three previous successive Assembly sessions.

The Health District Bill permits two or more towns, cities, and boroughs to unite into a locally self-governing district department of health, and authorizes the state to pay up to 50 per cent of the cost of operating such a department. This is limited by a ceiling of $4,000 available to any one municipality, and $20,000 to any one district. An appropriation of $25,000 was made for financing district health departments during the biennium 1947–1949.

The Connecticut *Bulletin* points out that, although this is a modest appropriation, "it represents the beginning of a program which may eventually make extensive public health services available to all Connecticut communities." It urges communities to "convince local boards of selectmen that full-time local departments of health are desirable and necessary." "First come —first served," it urges.

HOUSING SEMINAR

In June the Department of Public Health of Yale University held a three day Seminar on the Hygiene of Housing in coöperation with the A.P.H.A.'s Committee on the Hygiene of Housing, the Connecticut State Health Department, and the New England districts of the U. S. Public Health Service and the Federal Public Housing Authority. The purpose of the Seminar was to bring to the attention of state and local health and housing officials up to date information on housing. "That health departments will continue to have an increasing stake in housing activities is self-evident," declared the program announcement.

Among the speakers were C.-E. A. Winslow, Dr.P.H., on the "Basic Principles of Healthful Housing," and Allan A. Twichell on "Appraising the Quality of Urban Housing." They are respectively Chairman and Technical Secretary of the Association's Committee on the Hygiene of Housing.

The conference was attended by a representative group of health officers, sanitation personnel, and housing officials from the Northeastern States.

INTERNATIONAL CONGRESS OF NURSES

The first post-war Congress of the International Council of Nurses was held in Atlantic City in May. It was attended by 6,600 professional nurses, 748 of them from 38 nations outside of the United States. This was the first

Congress of this Council since the one held in London in 1937. The next Congress, celebrating the fiftieth anniversary of its founding, will be held in Stockholm in June, 1949.

The Congress adopted the findings of a Study Committee calling for an enlarged program, including a Bureau of Education in the Council, and for a return of headquarters to London as soon as feasible.

Officers elected at the May meeting were:

President—Gerda Hojer, President, Swedish Nurses' Association
First Vice-President—Mary I. Lambie, Director, Division of Nursing, New Zealand Health Department
Second Vice-President—Katherine J. Densford, President, American Nurses' Association
Third Vice-President—Grace M. Fairley, formerly Director of Nurses, Vancouver (B. C.) General Hospital
Treasurer—G. E. Davies, formerly Registrar, General Nursing Council for England and Wales

MISSOURI PUBLIC HEALTH ASSOCIATION

The Missouri Public Health Association elected the following new officers at its recent Annual Meeting:

President—William J. Dixon, Kansas City
President-Elect—Alexander E. Murphy, D.D.S., St. Louis
1st Vice-President—Lucille Whitesides, R.N., Jefferson City
2nd Vice-President—William F. McCarthy, M.D., Independence
Treasurer—John Buxell, St. Louis
Secretary—Margaret Willhoit, R.N., Kansas City

GEORGIA PUBLIC HEALTH ASSOCIATION

The Georgia Public Health Association elected the following new officers at its Annual Meeting held in Atlanta, June 9–11.

President—M. E. Winchester, M.D., Brunswick
President-Elect—C. A. Henderson, M.D., Savannah
Vice-President—J. A. Willman, Columbus
Secretary-Treasurer—Louva G. Lenert, Atlanta
Representative on A.P.H.A. Governing Council—Louva G. Lenert, Atlanta

PUBLIC HEALTH ASSOCIATION OF NEW YORK CITY

The Public Health Association of New York City met at the Hotel Martinique on the afternoon and evening of June 2. Two section meetings were held in the afternoon, one on environmental sanitation and one a spirited panel discussion on the future of voluntary health agencies in the light of increasing appropriations and trained personnel in official federal, state, and local health departments. The speakers at the dinner meeting were Dr. Jerome S. Peterson on "Public Health Progress as I Saw it in China," and Ralph G. Albrecht, attorney, on "The Nurenberg Trial."

Dr. John L. Rice, former City Health Commissioner of New York was elected President. Other officers were:

1st Vice-President—Helen Crosby
2nd Vice-President—Dr. Jacob A. Goldberg
Secretary-Treasurer—Charles A. Freck
Representative to the A.P.H.A. Governing Council—Frank Kiernan
Members of the Executive Board—Jean South, Sophie P. Williams, Dr. Michael Antell, Dr. Thomas D. Dublin, Dr. Franklin Foote, Dr. Jerome S. Peterson, and Mr. Kiernan.

IDAHO PUBLIC HEALTH ASSOCIATION

The following officers were elected to serve for the year 1947–1948 at the recent Annual Meeting of the Idaho Public Health Association.

President—H. D. Cramer, M.D., Moscow
1st Vice-President—Clara S. Evans, Sandpoint
2nd Vice-President—A. R. McCabe, M.D., St. Maries
3rd Vice-President—A. M. Popma, M.D., Boise
4th Vice-President—Sister M. Alma Dolores, Boise
5th Vice-President—Mrs. C. S. Bosquet, Pocatello
Secretary—John W. Wright, Boise
Treasurer—Frances Goodwin, Boise
Representative to A.P.H.A. Governing Council—L. J. Peterson, Boise

NORTH DAKOTA PUBLIC HEALTH ASSOCIATION

The fourth annual meeting of the

North Dakota Public Health Association was held in Fargo in May. Among the items on the program was a panel discussion on "What are Our Public Health Liabilities and Assets," led by Carl E. Buck, Dr. P. H., Field Director of A.P.H.A.

The following officers were elected for the coming year:

President—A. L. Bavone
Vice-President—Everett Lobb
Secretary—Mrs. Margaret Watts
Treasurer—Howard C Hammond
Advisory Council Members — Mrs. Jerome Evansen, Elvira Smith, Pat Steele, Jerome Svore, Caspar Walhowe, Gladys Wentland.

KANSAS PUBLIC HEALTH ASSOCIATION ELECTS NEW OFFICERS

At its Annual Meeting held May 27–28, the Kansas Public Health Association elected the following officers to serve for the next year:

President—Charles A. Hunter, Ph.D., Topeka
Vice-President—Manila Robbins, Topeka
President-Elect—J. E. Wolfe, M.D., Wichita
Secretary—Evelyn Ford, Topeka
Treasurer—Arthur Wallach, Olathe

CONNECTICUT PUBLIC HEALTH ASSOCIATION

The Connecticut Public Health Association reports the following new officers elected at its Annual Meeting on May 27:

President—Thomas J. Bergin, M.D., Greenwich
President-Elect—George B. Davis, M.D., Milford
Vice-President — Sterling P. Taylor, M.D., North Haven
Secretary-Treasurer—Jessie P. Halbert, Meriden

COLORADO PUBLIC HEALTH ASSOCIATION

At the annual meeting of the Colorado Public Health Association at Colorado Springs in May, 1947, the following officers were elected for the coming year:

President: Alfred E. Kessler, Executive Secretary, Denver Tuberculosis Society
Vice-President: Robert Downs, D.D.S., Director of Dental Hygiene. Colorado State Health Department
Secretary: Norma Johannis, Director of Health Education, Colorado State Health Department
Treasurer: Mrs. Georgia Ball Travis, Director of Social Service, Colorado General Hospital

ILLINOIS PUBLIC HEALTH ASSOCIATION

The new officers elected at the recent Annual Meeting of the Illinois Public Health Association are as follows:

President—E. A. Piszczek, M.D., Chicago
President-Elect — Maude B. Carson, R.N., Springfield
Secretary-Treasurer—Harold M. Cavins, Ed.D., Charleston

SOCIAL HYGIENE LIFE MEMBERSHIP TO DR. CHESLEY

Dr. Albert J. Chesley, for more than a quarter of a century the Executive Officer of the Minnesota State Department of Health, has been awarded an honorary life membership in the American Social Hygiene Association. The *Journal* cannot hope to reprint all of the accomplishments listed in the citation accompanying this award which says among other things, "nobody could very well think of health in Minnesota's last forty years without Chesley there." However, the American Social Hygiene Association, (1790 Broadway, New York 19) has printed the citation in a leaflet whose cover page has a photograph of Dr. Chesley. They will be glad to send this to anyone requesting it while the supply lasts.

PUBLIC HEALTH NURSE ON STAFF OF HARVARD SCHOOL OF PUBLIC HEALTH

Frances M. Frazier, R.N., has been appointed Instructor in Public Health Nursing in the Department of Public Health Practice of the Harvard School of Public Health, beginning with the academic year 1947–1948. This represents the first appointment of a public health nurse to the staff of the school. Miss Frazier has just completed her

work for the M.P.H. degree in the Harvard School. During the war she served for nearly three years as nursing consultant to Jugoslavia under UNRRA.

DR. COURTNEY SMITH DIES IN AIRPLANE ACCIDENT

Courtney Smith, M.D., Dr. P. H., Medical Director, American National Red Cross, Washington, D. C., was among the 50 persons killed in the wreck of a Capitol Airliner on June 13 in the mountains of West Virginia.

Dr. Smith, a native of Michigan, was a graduate in medicine of the University of Oregon in 1933, with a Doctorate in Public Health from Yale in 1938. He had been a county health officer in Oregon, Assistant Health Officer in Portland, Oregon, and Assistant Commissioner of Health of the Territory of Alaska prior to his service in the war, which included a number of months in Germany. He was appointed Medical Director of the Red Cross recently when Dr. G. Foard McGinnes was made Vice-Chairman in charge of health services.

Dr. Smith joined the American Public Health Association in 1937 and was elected a Fellow of the Health Officers Section in 1941. He had served in many representative capacities, most recently as alternate delegate of the American Red Cross to the National Health Council.

TEN YEARS OF JANE COFFIN CHILDS CANCER FUND

Stanhope Bayne-Jones, M.D., Director, at a recent 10th Anniversary dinner meeting, reported that the Jane Coffin Childs Memorial Fund had expended nearly a million dollars in cancer research and had made total appropriations of $1,343,000 through 1950. Annual appropriations have risen from $40,000 in 1937 to $171,000 in 1947.

Located at Yale University, the operation of the fund is not restricted to any single institution. From 40 to 60 per cent of annual appropriations have been given to Yale. The present ratio is about 50 per cent.

NURSES IN PUBLIC HEALTH

The annual report of the U. S. Public Health Service on the number of nurses employed for public health work in the United States has recently been published. It shows 21,500 public health nurses employed on January 1, 1947, an increase of only 4 per cent over the previous year. However, the three previous years registered slight declines. Nearly three-fourths of all public health nurses reported were employed by local official health agencies or school boards. The complete analysis, made up of 14 statistical tables, is available from U. S. Public Health Service, Washington, D. C.

M.P.H. DEGREES TO HARVARD–M.I.T. SCHOOL OF PUBLIC HEALTH GRADUATES

At the Harvard University Commencement exercises in June, 43 living graduates of the former joint Harvard-Massachusetts Institute of Technology School of Public Health were awarded the degree of Master of Public Health. The school was in operation between 1913 and 1922, during which time those who have now received the Master's degree received the "Certificate in Public Health."

REPRINTS

Reprints of the article by Jessie M. Bierman, M.D., and Donald R. Cazianc of the California Department of Public Health, which appeared in the April issue of the *American Journal of Public Health* are available gratis in lots of five or ten copies to public health officers, school nurses, and administrators, parent-teachers study groups. Address Mrs. Mary Rogers Miller, 1209 Crenshaw Boulevard, Los Angeles 6, Calif.

KANSAS ESTABLISHES A CANCER REGISTRY

The University of Kansas School of Medicine and Hospital, under the direction of the Division of Cancer Control of the State Board of Health, is establishing a cancer registry. Abstracts of about 800 cases of cancer for the year 1945 from the records of the department of pathology have been completed. Cancer records from the William Newton Memorial Hospital and St. Mary's Hospital at Winfield have also been received. This is one of the initial steps leading to the establishment of diagnostic cancer clinics as approved by the coöperative cancer control group in Kansas, the Kansas Medical Society, the Kansas Division of the American Cancer Society, and the Kansas State Board of Health.

WEST VIRGINIA RAPID TREATMENT CENTER TRANSFERRED TO STATE HEALTH DEPARTMENT

The Kanawha Valley Medical Center, the state's rapid treatment center, South Charleston, was transferred April 1 from the federal government to the State Department of Health. The present staff of forty-five, including two doctors, is being retained. More than 10,000 persons were treated during the three years the center was operated by the government. Of these, more than one-fourth were under 21 years of age, 17.4 per cent between 18 and 21, and 1.3 per cent infants under 1 year of age. The cost per patient for the treatment of syphilis has been about $46. After July 1 the state is expected to assume about 30 per cent of the cost of the center.

TOMPKINS COUNTY (N. Y.) APPOINTS BOARD OF HEALTH

Tompkins County, with a population of nearly 50,000 and including the City of Ithaca, is the fourth New York county to organize under the provisions of the 1947 amendment to the Public Health Law whereby a county health department receives state reimbursement for 75 per cent of the first $100,000 spent for public health work, and 50 per cent of amounts in excess of $100,000. The county supervisors recently appointed a county board of health and are recruiting a county health commissioner and other personnel.

NEW CITY-COUNTY HEALTH DEPARTMENT IN ILLINOIS

Among the war emergency measures initiated in a number of Illinois communities was an arrangement whereby the medical health officer of the chief city in a county also supervised the health work of the rest of the county. Such an arrangement was in effect in Adams County where the Quincy Health Officer, Dr. O. H. Collins, gave general supervision to the health work in the county as well.

On April 1, 1947, in a referendum election, the citizens of Adams County voted the consolidation of the city and county health departments by a plurality larger than any received by candidates elected to office. The new County Board of Health will assume jurisdiction over the entire county population of more than 65,000 on March 31, 1948.

GEORGE W. FULLER AWARD TO MAC H. MC CRADY

Mac H. McCrady, Chief, Division of Laboratories of the Ministry of Health, Province of Quebec, was selected as the recipient for the George W. Fuller Memorial Award by the Canadian Section of the American Water Works Association during their 27th annual meeting held in Montreal during April, 1947. The citation read:

> For notable accomplishments in the water works field and in the affairs of this association especially in the interpretation of laboratory analyses, and in the development of "Standard Methods for Water Examination."

WASHINGTON REPORT ON THE MEDICAL SCIENCES

On June 9 the weekly news letter, *Washington Report on the Medical Sciences,* began publication. Its aim is to report highlights of nationally significant developments in the week's news, to interpret, and to forecast now and then. Its editor is Gerald G. Gross, since 1930 science writer of the *Washington Post,* and currently consultant on public relations to the Surgeon General, U. S. Army. He was also special consultant for the recent medical survey report on the bituminous coal industry. (526 Bond Building, Washington, D. C. $50 a year.)

PUBLIC HEALTH OFFICERS HONORED

At a joint dinner of the Canadian Public Health Association and the State and Provincial Health Authorities of North America in Quebec May 22 certificates of honorary membership in the Canadian Association of Public Health were presented to Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service, and to Dr. Walter L. Bierring, President of the State and Provincial Health Authorities of North America and Commissioner of Health of Iowa, both of whom addressed the group.

YOUTH SERVICE NEWS

In December, 1946, the New York State Youth Commission (24 James Street, Albany) published vol. 1, no 1 of *Youth Service News* as an experiment in pooling knowledge and experience in the youth service field. It announced that frequency or even continuation of publication would depend on the need and whether the need is met in this way. Its announced intention of "no desire to publish for the sake of publishing," should prevent editorial hardening of the arteries. At any rate vol. 2 of *Youth Service News* came out in April, 1947.

CORRECTION

DENNYS L. LYALL,† reported in June as health inspector of Salisbury Southern Rhodesia, Africa, was incorrectly reported as previously Assistant Director of Antitoxin, Serum, and Vaccine Laboratories, New York State Department of Health. HAROLD W. LYALL, PH.D.,* holds the latter position and is still in Albany.

PERSONALS

Central States

AUGUST BAIER, M.D.,* has been appointed Medical Director, United States Rubber Company, Detroit, Mich. Dr. Baier was formerly Medical Director, Solar Aircraft Co., Des Moines, Ia.

F. C. BEELMAN, M.D.,* Secretary and Executive Officer of the Kansas State Board of Health, was elected president of the Conference of State and Provincial Health Authorities of North America, at the 1947 session held May 20 and 21 at Quebec, Canada.

RICHARD G. BOND,† formerly Assistant Engineer, State Department of Health, Des Moines, Ia., has been appointed Assistant Professor, School of Civil Engineering, Cornell University, Ithaca, N. Y.

SETH L. COX, M.D.,† formerly Medical Director of the Kansas Tuberculosis and Health Association, has been appointed Executive Secretary, succeeding C. H. LERRIGO, M.D.,* who becomes Executive Secretary Emeritus.

JOSEPH E. FLANAGAN, JR.,† formerly Industrial Hygiene Engineer, Ohio State Health Department, has been appointed Industrial Hygiene Consultant, District No. 3, U. S. Public Health Service, Chicago, Ill.

ROLLA N. HARGER, PH.D., Professor of Biochemistry and Toxicology in the Indiana University School of Medi-

cine, Bloomington-Indianapolis, has joined the staff of the Indiana Bureau of Industrial Hygiene as consultant on toxicology.

R. M. HEILMAN, M.D.,† has returned to service with the Kansas State Board of Health, as Director of the newly created Division of Hospital Survey and Construction. Dr. Heilman was formerly Director of the state health department's Industrial Hygiene Division, having been appointed to that Division when it was established. For the last several months he has been practising internal medicine at Winter Veteran's Hospital.

ROSCOE L. SENSENICH, M.D., practising physician of South Bend, Ind., was made Presiding President-elect of the American Medical Association for 1947–48 at the Centennial Meeting of the Association in Atlantic City in June.

ALFRED H. WIETERS,* formerly Director of the Division of Public Health Engineering of the Iowa State Department of Health, has become a sanitary engineer with the U.S.P.H.S., assigned to the hospital construction program.

ALEXANDER WITKOW, M.D.,* formerly city-county health commissioner of Delaware, Ohio, has been appointed director of the Bureau of County Health Work in the West Virginia State Department of Health, to succeed NORMAN G. ANGSTADT, M.D.,† resigned.

Eastern States

CONRAD BERENS, M.D., of New York City, was elected vice-president of the National Society for the Prevention of Blindness at the June meeting of the Board of Directors. Dr. Berens is Director of the Graduate Course of the Department of Ophthalmology, New York University, and Executive Surgeon of the New York Eye and Ear Infirmary and Affiliated Institutions.

CHESTER S. BOWERS,* acting director since March 1, 1946, was appointed Director, Bureau of Public Health Information, Connecticut State Department of Health, effective April 1, 1947.

JOHN E. GORDON, M.D.,* Professor of Preventive Medicine and Epidemiology, Harvard University, Boston, Mass., was recently awarded the Liberty Cross by His Majesty the King of Norway, in recognition of services to Norway during World War II.

EDWARD S. HOPKINS,† Associate Engineer of the Baltimore Department of Public Works, has been appointed Chairman of the Committee on Standard Methods for the Examination of Water and Sewage of the American Chemical Society.

HELEN E. KINNEY,† former Instructor, Public Health Nursing Department, Seton Hall College, Newark, N. J., has been appointed Assistant Director, Division of Public Health Nursing, St. Louis University, St. Louis, Mo.

HENRIETTA LANDAU, R.N.,* has been appointed Assistant Professor of Nursing Education at New York University's School of Education. She was formerly consultant public health nurse with the U. S. Public Health Service.

HUGH R. LEAVELL, M.D.,* was elected President of the Massachusetts Central Health Council on May 1.

ROMAYNE W. LILOIA,† formerly Supervisor, Visiting Nurse Association, Scranton, Pa., has been appointed Consulting Public Health Nurse, Division of Local Health Administration, North Carolina State Board of Health.

* Fellow, A.P.H.A.
† Member, A.P.H.A.

HAROLD P. LYON, M.D., former Director of Medical Services, Sanitation, and Preventive Medicine Division, Royal Canadian Air Force, has been appointed Industrial Physician and Medical Director to "Hartford Group," Small Industrial Plants, in Hartford, Conn.

NEW APPOINTMENTS TO THE MASSACHUSETTS DEPARTMENT OF HEALTH:

WILLIAM D. WELLOCK, D.M.D., a Navy veteran and recent graduate of the Harvard School of Public Health, as Director of the Division of Dental Health.

GRACE E. LUTMAN, M.D., DR.P.H.,† former assistant state district health officer, New York State Department of Health, as Supervisor of Clinics for Crippled Children.

FRANCIS W. HOOPER, M.D., as district health officer of the South Metropolitan district with headquarters in Quincy. Prior to his appointment, Dr. Hooper saw 18 months' service in the European Theatre of Operations as a captain in the Medical Corps, AUS.

CLAUDE W. MUNGER† was recently appointed a member of the hospital advisory committee of Associated Hospital Service—New York's Blue Cross Plan. Dr. Munger is director of St. Lukes Hospital and professor of hospital administration at Columbia University.

CHANGES IN NEW YORK STATE DEPARTMENT OF HEALTH:

Assistant District Health Officers appointed. WILLIAM R. DONOVAN, M.D., Geneva; FRANK R. FRECKLETON, M.D.,† Utica; MICHAEL LIPARI, M.D.,† Middletown; CLAYTON M. STEWARD, M.D.,† Binghampton; VINCENT H. HANDY, M.D.,† Buffalo.

JOHN M. CHAPMAN, M.D.,† district health officer in the Saranac Lake District, resigned from the department to become Assistant Director of the Medical Section of the Health Department of the City of Los Angeles, Calif.

DON M. GRISWOLD, M.D.,* district health officer in the Geneva district, retired effective May 31.

RAY E. TRUSSELL, M.D.,† was appointed Epidemiologist in the Division of Communicable Diseases.

H. C. MILES, M.D.,† and W. C. SPRING, JR., M.D.,† formerly apprentice epidemiologists on the staff of the State Department, were appointed deputy commissioners of health of Cattaraugus and Rensselaer County Health Departments, respectively.

JULIA MACPHILLIPS, consultant public health nurse in social hygiene work, retired from State service after serving 27 years in the department.

HOWARD A. RUSK, M.D.,† Chairman of the Department of Rehabilitation and Physical Medicine of New York University, New York, N. Y., and Associate Editor of *The New York Times*, was recently awarded the degree of Doctor of Science by the University of Missouri.

CHARLES C. SPENCER, C.E., has been appointed Assistant Professor of Sanitary Science, School of Public Health, Columbia University, effective July 1, 1947. Major Spencer's recent experience includes sanitary and public health engineering assignments with the Dorr Company in the United States and Europe, the U. S. Public Health Service in the United States and Central America, and the Sanitary Corps, U. S. Army, in the United States and Brazil. His appointment is coupled with an enlarged curriculum in the regular program of gradu-

* Fellow, A.P.H.A.
† Member, A.P.H.A.

ate engineering training for public health engineers which has been offered since 1921 by the School of Public Health.

MAJOR GENERAL MORRISON C. STAYER,* U. S. Army, Retired, at present chief of the Bureau of Tuberculosis Control, Pennsylvania State Department of Health, was decorated with the Legion of Merit at Carlisle Barracks, Pa., in April, 1947. The citation refers to General Stayer's control of typhus, typhoid fever, and other epidemics in the American Zone of occupied Germany.

HELEN E. WATKINS † has resigned as Director of Recruiting, Training and Placement of Personnel of the New York State Charities Aid Committee on Tuberculosis and Public Health to become Executive Secretary of the Arizona Anti-Tuberculosis Association with headquarters in Phoenix.

Southern States

MAJOR GENERAL RAYMOND W. BLISS, on June 1 became the new Surgeon General of the Army, succeeding MAJOR GENERAL NORMAN T. KIRK who will retire from active duty. Since January 1, 1946, General Bliss has served as Deputy Surgeon General. BRIG. GENERAL GEORGE E. ARMSTRONG assumes the duties of Deputy Surgeon General.

RUTH BUNKER, R.N., on July 1 joined the West Virginia State Department of Health as consultant nurse in tuberculosis. Before joining the armed forces she was a pubic health nurse in Braxton County and with the Fayette County Tuberculosis Association.

CARL M. GAMBILL, M.D.,† formerly Director of Local Health Work in the Kentucky State Health Department, is now Associate Editor, Division of Publications, Mayo Clinic, Rochester, Minn.

JOHN M. HOOPER, M.D., M.P.H.,* has resigned from his position as Director, Amarillo Health Department, Amarillo, Texas, to go into private practice.

GRACE I. LARSEN, R.N.,† has been appointed Supervising Nurse, U. S. Public Health Service at Weld County Health Department, Greeley, Colo. Miss Larsen was formerly assigned Supervising Nurse, Marion County Health Department, West Virginia.

NELL MCKEEVER † has been appointed Health Education Consultant, Office of Health Education, U. S. Public Health Service, Brookline, Mass. Miss McKeever was formerly Health Educator of the City-County Health Department, Muskogee, Okla.

WILLIAM GREGORY MORGAN, M.D.,† former Health Officer, Clark-Montgomery Co., Kentucky, has been appointed Medical Director of the General Electric Co., Owensboro, Ky.

JAMES A. MORROW † has been appointed Office Manager, E. L. Miller Welding Contractor, West Chester, Pa. He was formerly Assistant Sanitarian, U. S.P.H.S., City Health Department, Charlotte, N. C.

MORRIS A. NUSSBAUM † has been appointed Sanitary Chemist, Kingston City Laboratory, Kingston, N. Y. He was formerly Chemist, U.S.P.H.S., State Hygiene Laboratory, Jackson, Miss.

MARION L. SHADDIX, M.D.,† has been appointed Chief Medical Officer, Veterans Administration, Medical Unit, Gadsden, Alabama. Dr. Shaddix was formerly Health Officer, Clay and Randolph Counties.

JAMES H. STEELE † has been appointed head of the Veterinary Public Health Section which has been established in the States Relations Division of the U. S. Public Health Service. This section will conduct demonstration projects on the control of animal diseases communicable to man and will collect epidemiological data pertinent to these diseases.

Western States

ANSTA BARR, M.S.,† has been appointed Nutrition Consultant, U. S. Children's Bureau, Federal Security Agency, Dallas, Texas. She was formerly Nutrition Consultant for the Arizona State Health Department.

ARVE H. DAHL† is Chief, Mosquito Control Section, California State Department of Public Health, Berkeley.

J. C. GEIGER, M.D.,* Director of Public Health, San Francisco, Calif., has been honored by Her Gracious and Royal Majesty, The Queen of Holland, with the Royal Order of the Crown of Orange Nassau, Officer grade. It was accompanied by the following citation: "For distinguished services to the Crown and nation during World War II and for remarkable insight and understanding of public health."

AUDREY IMMEL,† Acting State Registrar, has resigned her position in the Vital Statistics Section, Oregon State Board of Health, to accept appointment to the staff of the New Mexico Department of Health with headquarters in Santa Fe.

ELLARENE L. MACCOY, M.D.,† formerly district medical officer of the Los Angeles area for the Bureau of Maternal and Child Health, has resigned after serving the Department of Public Health for over 11 years, to accept a teaching position with the University of California at Los Angeles.

ROBERT J. OWENS,† formerly Director, Division of Industrial Hygiene, Colorado State Department of Health, has been appointed Chief, Health and Safety Section, Veterans Administration, Branch 13, Denver, Colo.

GEORGE W. STILES, M.D.,† Bacteriologist in Charge, Branch Pathological Laboratory, Bureau of Animal Industry, U. S. Department of Agriculture, Denver, Colo., who has served many years with the U. S. Department of Agriculture in various capacities retired on July 31, to devote himself to consulting services.

South America

SÉRVULO LIMA, M.D.,† Public Health physician of the National Department of Health of the Ministry of Education and Health of Brazil and Superintendent of the Servico Especial de Saúde Pública was granted retirement by the President of the Republic, through a recent decree. He will continue his service with the Servico Especial de Saúde Pública, where, surrounded by the well-merited confidence of the Ministry of Education and Health, The Institute of Inter-American Affairs and all his colleagues, he will continue to work with this program outlined in the Good Neighbor Policy for the health of the Americas.

Deaths

EDWARD R. BALDWIN, M.D., one of the few remaining pioneers in the fight against tuberculosis who shared in the work of EDWARD LIVINGSTON TRUDEAU, M.D., died at the age of 82 at Saranac Lake on May 6. Dr. Baldwin went to Saranac Lake in 1892 as a tuberculosis patient and remained as a close associate of Dr. Trudeau and director of the Saranac Lake Laboratory for the Study of Tuberculosis. He was one of the founders of the Trudeau Sanitarium, was president of the National Tuberculosis Association in 1915 and 1916, and was awarded the Trudeau Medal in 1927.

FRED WELDEN CAUDILL, M.D., Epidemiologist of the Kentucky State Health Department, died in Louisville on January 12, 1947 at the age of 47.

* Fellow, A.P.H.A.
† Member, A.P.H.A.